WOMEN GO TECH

ICT workforce in Europe and its gender challenge after Covid-19.

An overview of good practice solutions, with a focus on the Nordic-Baltic region.

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2021

ACKNOWLEDGEMENTS

This report has been delivered in the context of the project “Developing an inclusive Tech ecosystem in the Nordic and Baltic regions”, financed by the Nordic Council of Ministers. The authors of the report are in particular grateful to the team of Nordic Council of Ministers Office in Lithuania for their support to this initiative. In addition, we are grateful for the staff of Women Go Tech, in particular Ūla Pociūtė and Vaiva Mockutė for providing the data on Women Go Tech activities as well as sharing the data collected during the country visits carried out in the context of this project. We are also grateful for the anonymous staff of Eurostat, who were very kind in providing access to the available statistical data, allowing for its extensive use in the report.

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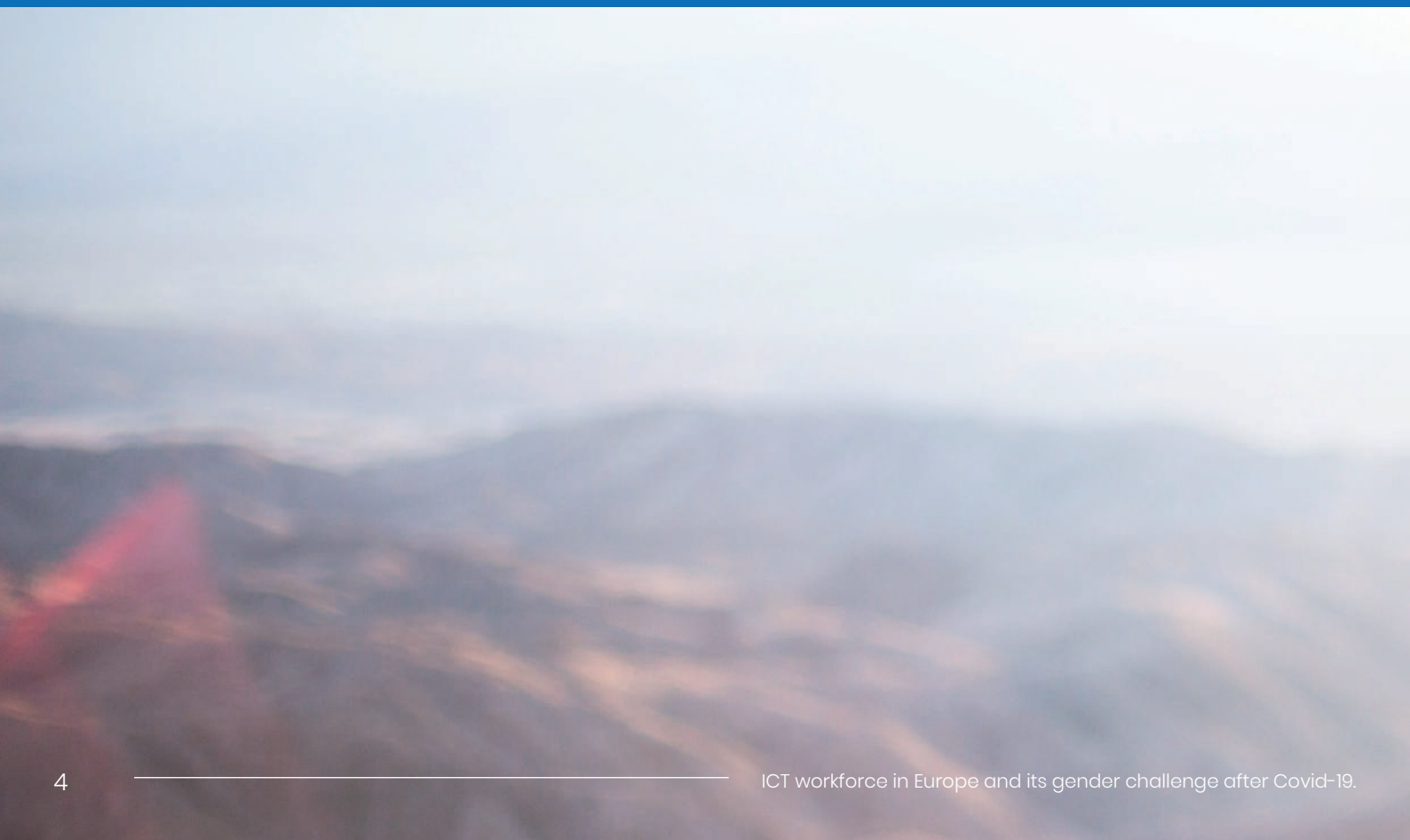
EXECUTIVE SUMMARY

With the growing prevalence of ICT technologies in our everyday life, the digital gender divide is becoming an ever more pertinent issue. This report focuses on one of the key dimensions of the digital gender gap – the ability of women to access the large and growing pool of ICT specialists' jobs. Currently in Europe less than one in five ICT specialist job is occupied by a woman. As this report is showing, if the current trends will continue, only very marginal change can be expected over the coming years. Part of the challenge, as is revealed in the report, is that the ICT education faces equally large, if not even more pronounced gender gap. In addition, given the fact that education systems take years to change and the effect of those changes may only appear a decade later, more rapid solutions are absolutely necessary to make change happen sooner. The report also reveals a very active ecosystem of grassroots initiatives across the Nordic-Baltic region, which, if mobilized and scaled-up, could very well make such more rapid change possible.

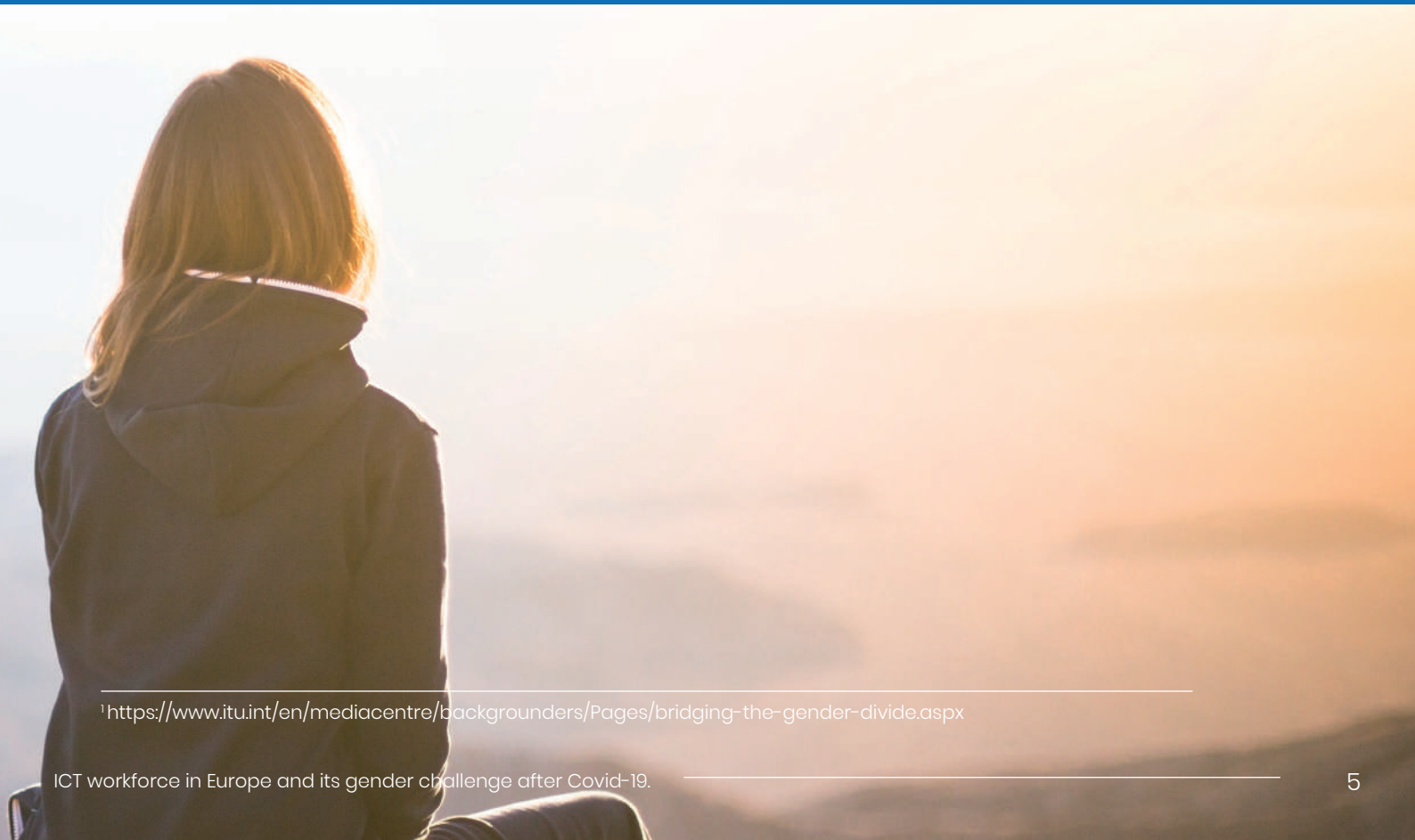


INTRODUCTION

The power and transformational potential of digital technology is not equally distributed. Globally, the majority of people without an internet connection are women. Many women also lack access to mobile phones. In addition, women lack digital skills and experience working with digital tools. Too few women participate in science, technology, engineering and math (STEM) fields. Ultimately, this results in persistent under-representation of women in the technology field, leadership positions and entrepreneurship[1].

Digital gender divide is not restricted to the developing world. The under-representation of women in STEM fields, technology-related jobs, technology startups or technology leadership positions is equally present in the most economically developed world territories, including Europe. Indeed, a low involvement of women in the countries where technology is developed, contributes to a vicious circle of new technologies being less women-friendly than they could be, thus further reinforcing gender divides even if technology is rapidly changing.

At the same time, there are no easy solutions which would allow to rapidly transform the deeply embedded cultural stereotypes, forming individual aspirations from early age and reinforcing them within education and employment pathways. Nevertheless, as will be shown in this report, there are many promising grassroot initiatives which only with a bit of consolidation and scaling could effectively contribute in addressing this very complex societal challenge.



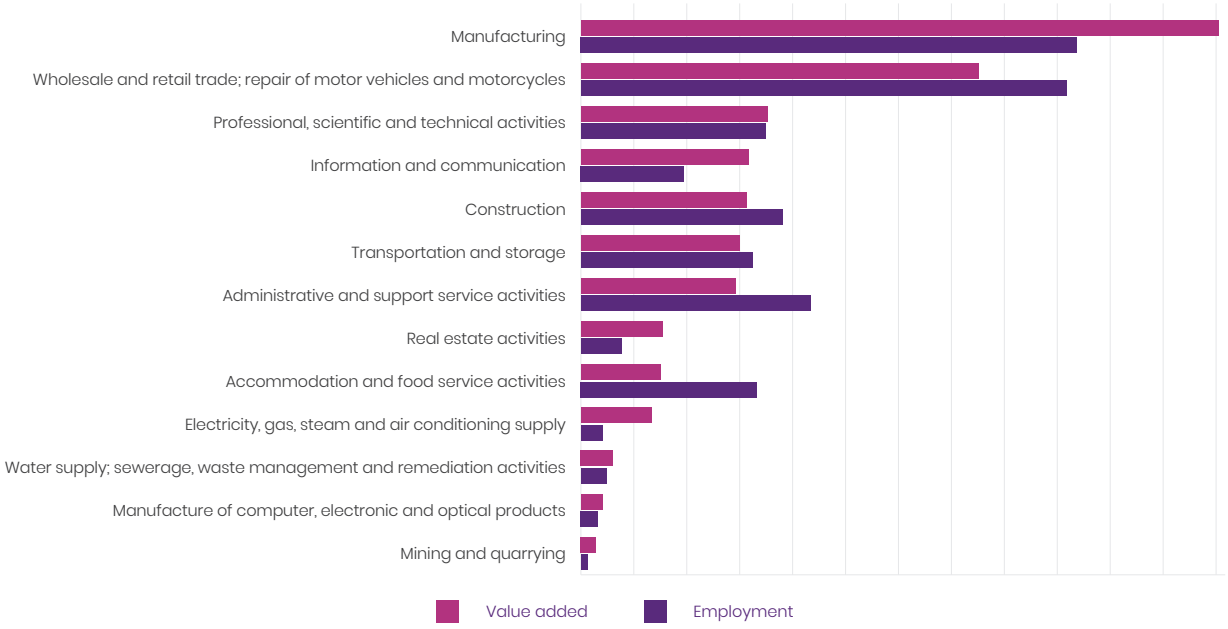
[1] https://www.itu.int/en/mediacentre/backgrounders/Pages/bridging-the-gender-divide.aspx

2. ICT EMPLOYMENT IN THE EU AND ITS GENDER DIMENSION: HISTORICAL TRENDS AND FUTURE PROJECTIONS

The increasing importance of the information and communication technologies (ICTs) in the economic and social life across the world has been evident already for a number of decades. But probably nothing revealed that role better than the Covid-19 pandemic, where almost overnight a huge number of workers could switch to working from home. Indeed, it is estimated that in July 2020 in the EU around half of the workforce – more than 100 million adults were working from home[2]. In the US, it is estimated that this proportion was even larger with more than 70% of workers working from home[3]. All this would not have been possible without a broad availability of personal digital devices and internet connectivity.

The simplest way to assess the impact of ICTs in the economy is by analyzing the prominence of the information and communication services sector, where the main activity of business is to provide ICT-related services[4]. In 2018 (the latest year for which such data is available), ICT services sector was the 4th largest business economy sector in the EU, representing 7.8% of the total value-added created in the business economy (see Chart 1), likely further increasing due to Covid-19. Between 2011 and 2018, ICT services sector was the fastest growing sector in terms of employment and fifth-fastest growing sector in terms of value added (see Table 1).

Chart 1. Non-financial business economy: value added and employment, EU-27, 2018



Source: Eurostat, Structural Business Statistics, online table code [sbs_sc_sca_r2]

[2] https://www.eurofound.europa.eu/topic/teleworking
[3] https://www.pewresearch.org/social-trends/2020/12/09/how-the-coronavirus-outbreak-has-and-hasnt-changed-the-way-americans-work/
[4] In comparison, the size of the ICT manufacturing sector in the EU is tiny, representing just 1.2% of the total value added and 0.7% of the total employment.

Table 1. The growth of value added and employment by economic sector, EU-27, 2011-2018

	Value added growth 2011-2018	Employment growth 2011-2018
Total business economy; except financial and insurance activities	25.7%	10.8%
Mining and quarrying	-24.1%	-28.2%
Manufacturing	31.4%	7.1%
Electricity, gas, steam and air conditioning supply	13.3%	17.0%
Water supply; sewerage, waste management and remediation activities	29.7%	21.8%
Construction	20.8%	3.1%
Wholesale and retail trade; repair of motor vehicles and motorcycles	18.6%	2.4%
Transportation and storage	17.9%	9.8%
Accommodation and food service activities	40.1%	25.8%
Information and communication	25.4%	28.5%
Real estate activities	24.2%	17.1%
Professional, scientific and technical activities	25.3%	19.3%
Administrative and support service activities	47.4%	23.3%

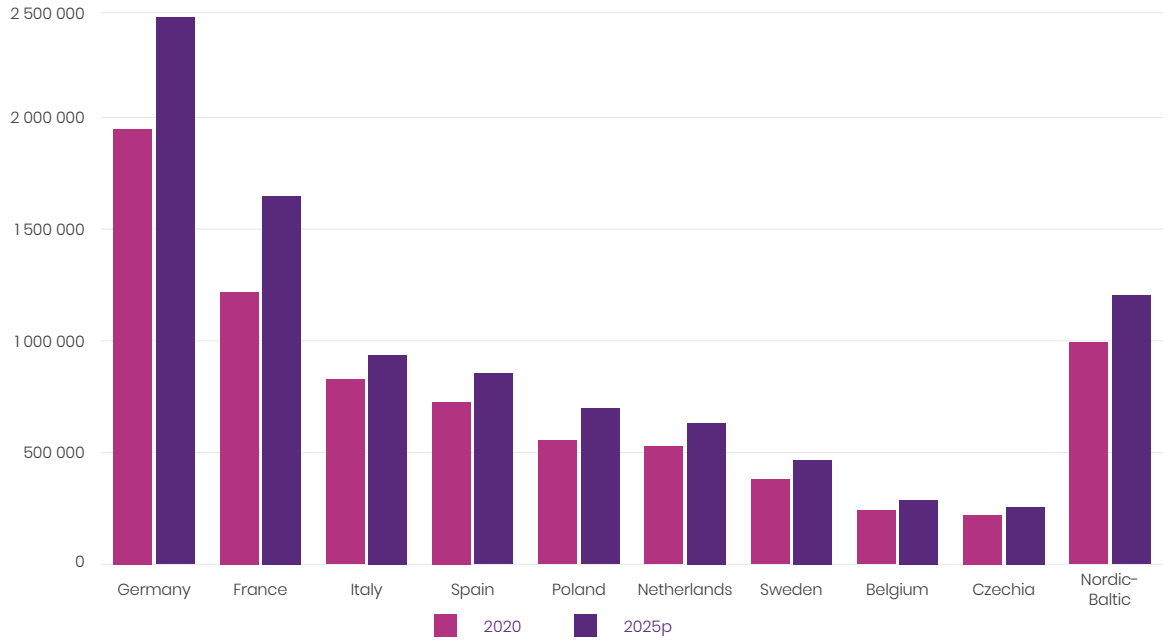
Source: Eurostat, Structural Business Statistics, online table code [sbs_sc_sca_r2]

2.1 ICT SPECIALISTS' EMPLOYMENT TRENDS

Another way how to look at the importance of ICTs in the economy is to calculate the number of jobs which deal with ICTs and require specialist ICT skills. In the European Union, in 2020, according to Eurostat there were nearly 8.5 million ICT specialists[5] in employment. During the pandemic year of 2020, the number of ICT specialists increased by nearly 600 thousand as compared to 2019. This was the largest single-year increase at least since 2004, the first year for which such data is available. In absolute terms, the largest number of ICT specialists in employment in 2020 were recorded in Germany – almost 2 million and France - 1.2 million (see Charts 2 and 3). A combined Nordic-Baltic region would be the third largest ICT-employment territory after Germany and France, representing nearly 1 million of ICT specialists in employment. It can be projected that, by 2025, if the average growth rates observed during the last decade remains, the total number of ICT specialists in the EU should reach 10.4 million, including nearly 2.5 million in Germany, 1.65 million in France and 1.2 million in the combined Nordic-Baltic region[6].

When looking at the relative share of ICT specialists as part of all employees, the top-3 countries with the largest share of ICT specialists were all from the Nordic-Baltic region: Finland - 7.6%, Sweden - 7.5% and Estonia - 6.5% (see chart 3). In terms of growth, since 2012 the number of ICT specialists has expanded the fastest in such countries as Malta (on average by 10% annually), Estonia (8.9%), Portugal (8.8%) and Lithuania (8.2%). The growth in other Nordic-Baltic countries was less pronounced, at around 3%-4%.

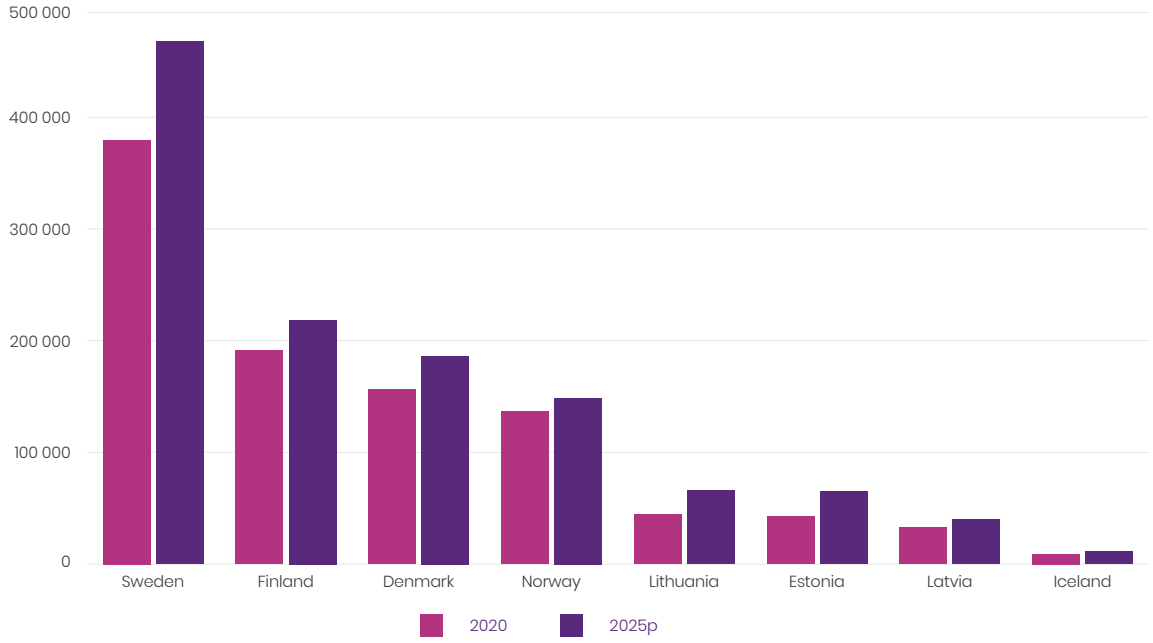
Chart 2. The number of ICT specialists in top 9 EU countries in 2020 and projection until 2025.



Source: Eurostat, Labour Force Survey, online table code [isoc_sks_itspt]. Reading notes: the regional group Nordic-Baltic includes (listed in alphabetical order) Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway and Sweden. The methodology and outputs of projections are presented in the Annex of this report.

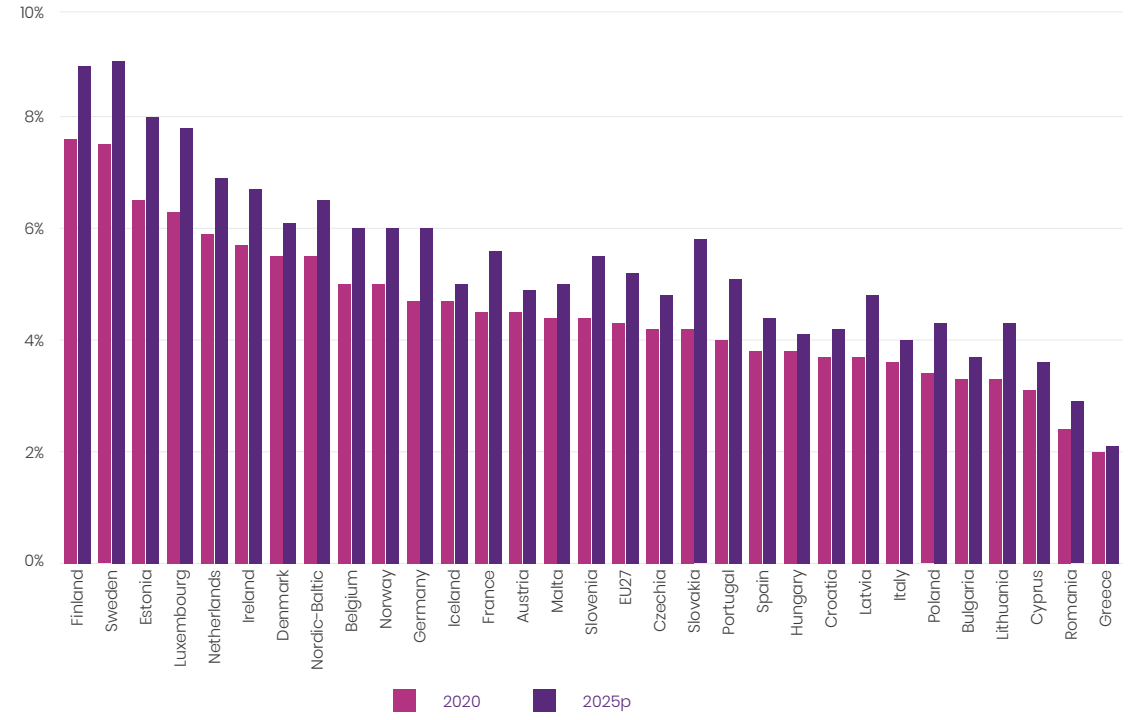
[5] Individuals working in occupations which are considered to require advanced ICT skills; see Annex I for more details on which occupations are included in line with Eurostat/OECD methodology.
[6] Projection has been calculated using constant average country-specific growth-rate as observed during the period between 2011 and 2020 and assuming that the average growth rate will remain the same until 2025.

Chart 3.The number of ICT specialists in Nordic-Baltic region in 2020 and projection until 2025.



Source: Eurostat, Labour Force Survey, online table code [isoc_sks_itspt]. Reading notes: the regional group Nordic-Baltic includes (listed in alphabetical order) Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway and Sweden. The methodology and outputs of projections are presented in the Annex of this report.

Chart 4. The share of ICT specialists as part of total employment, 2020 and projection until 2025.

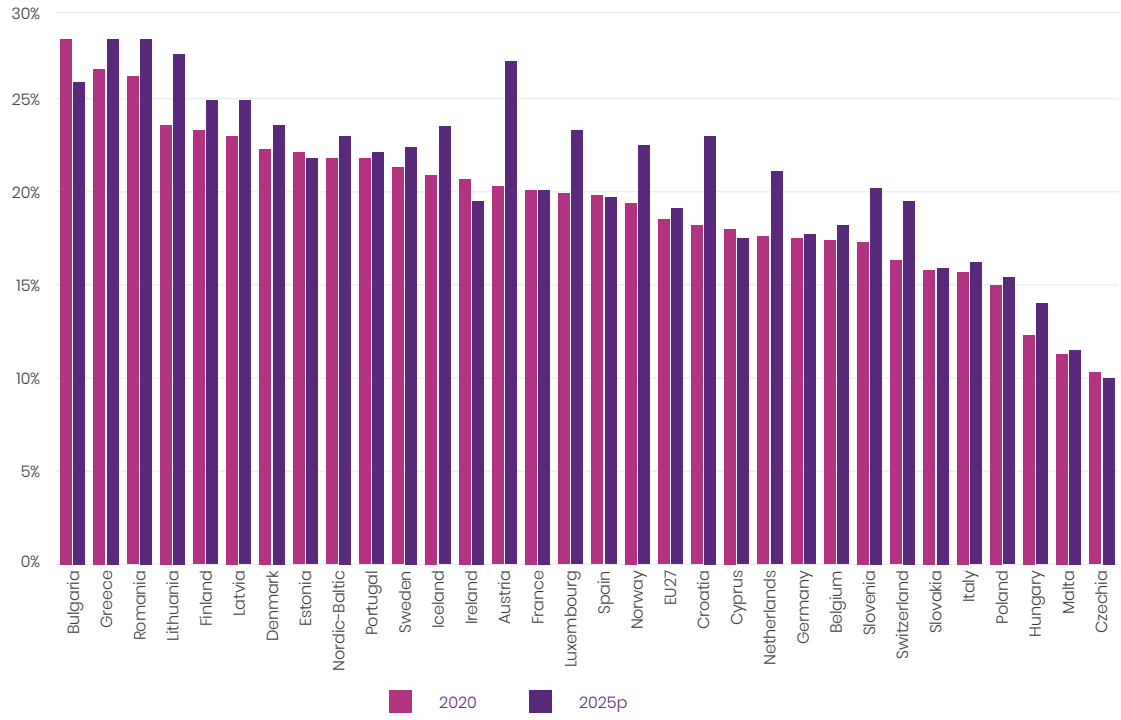


Source: Eurostat, Labour Force Survey, online table code [isoc_sks_itspt]. The methodology and outputs of projections are presented in the Annex of this report. Countries are ranked in descending order according to the share of ICT specialists in employment in 2020.

When looking at the share of women among ICT specialists in employment, in the EU27 in 2020 only 18.5% of all ICT specialists were women. The largest shares of women were in Bulgaria – 28.2%, Greece – 26.6% and Romania – 26.2% (see chart 5). The countries from the Nordic-Baltic region were also mostly near the top-end of the list, with the exception of Norway, which was more in the middle of the country ranking.

It can be projected that, by 2025, if the gender-specific ICT employment growth-rates will remain as in the last decade, the share of women among ICT specialists on average in the EU27 will increase only marginally up to 19.1%[7]. Countries with largest growth-rates observed between 2011 and 2020 (and thus projected to grow fastest until 2025) are Austria, Lithuania, Luxembourg, Norway, Croatia, Netherlands, Slovenia and Switzerland. In some countries, based on observed trends during the last decade, the gender gap in ICT is expected to increase, for example in Bulgaria, Estonia, Ireland, Cyprus or Czechia.

Chart 5. The share of women among ICT specialists, 2020 and projection until 2025.



Source: Eurostat, Labour Force Survey, online table code [isoc_sks_itsps]. Reading notes: the methodology and outputs of projections are presented in the Annex of this report. Countries are ranked in descending order according to the share of women among ICT specialists in 2020.

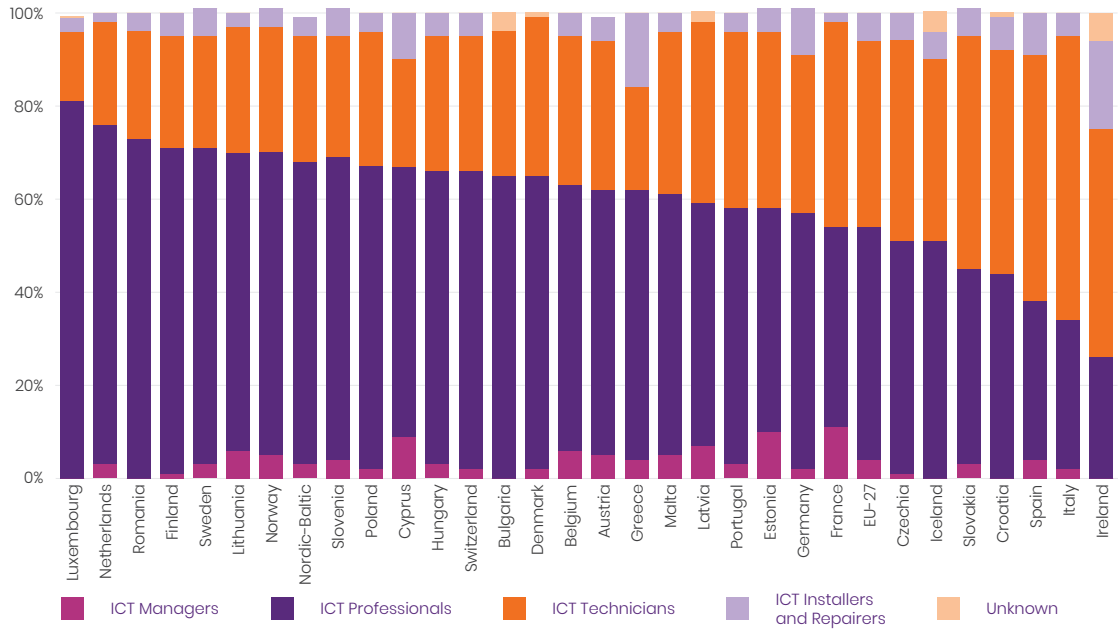
[7] Projection has been calculated using constant average country and gender-specific growth-rate as observed during the period between 2011 and 2020 (except for Lithuania between 2012 and 2020 as data for 2011 is not available) and assuming that the average growth rate will remain the same until 2025.

2.2 ICT SPECIALISTS, THEIR JOBS AND EDUCATIONAL BACKGROUND

Who are the ICT specialists? According to the definition used by Eurostat and OECD, ICT specialists are considered workers who are working on any one of a selected list of occupational groups whose jobs is to work with ICTs and whose jobs require specialist ICT skills. The official Eurostat definition of an ICT specialists is as follows: "ICT specialists are workers, who have the ability to develop, operate and maintain ICT systems and for whom ICT constitutes the main part of their job"[8] . Four broad categories of ICT specialists can be distinguished: ICT service managers, ICT professionals, ICT technicians and ICT installers and repairers. For a detailed list of ICT job types, please see Annex I.

In the EU27 in 2020, the largest category of ICT workers are ICT professionals, representing 50% of all ICT workforce. The second largest category are ICT technicians, representing 40% of all ICT workforce. The other two groups – ICT managers and ICT installers and repairers represent only a small proportion of the total ICT workforce. In terms of individual countries, the largest share of ICT professionals in 2020 was observed in Luxembourg, Netherlands and Romania, while the smallest share was observed in Ireland, Italy and Spain. Within the Nordic-Baltic region, ICT professionals represented 65% of the total ICT workforce. For more details on the distribution of ICT workforce across countries, please see chart 6.

Chart 6. Occupational composition of ICT workforce, 2020.



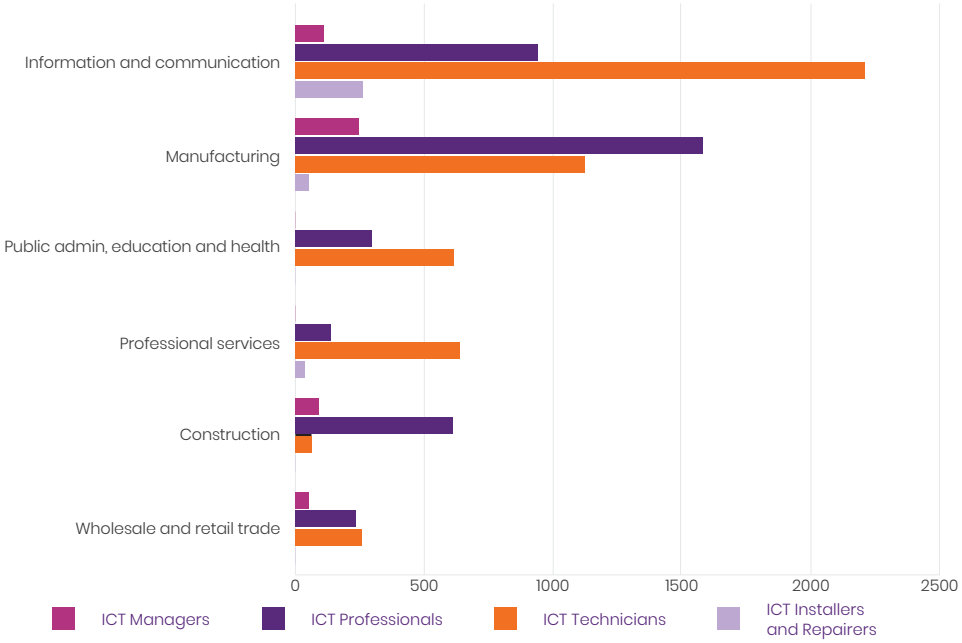
Source: Eurostat, Labour Force Survey, special data extraction provided by Eurostat. Reading notes: countries are sorted in descending order according to the share of ICT Managers and ICT Professionals in the ICT workforce.

[8] https://ec.europa.eu/eurostat/cache/metadata/en/isoc_skslf_esms.htm

In terms of economic sectors, in the EU27 in 2020 two sectors stood out as employing the largest number of ICT professionals: ICT services sector (representing 31% of total ICT jobs) and manufacturing sector (representing 27% of total ICT jobs). Four other economic sectors also had sizeable (above 0.5 million) ICT workforce: the broad public services sector (incl. Public administration, Education and Health), Professional Services sector, Construction sector and Trade sector (incl. Wholesale and Retail). For more details on the EU-level ICT workforce from the sectoral perspective, see Chart 7.

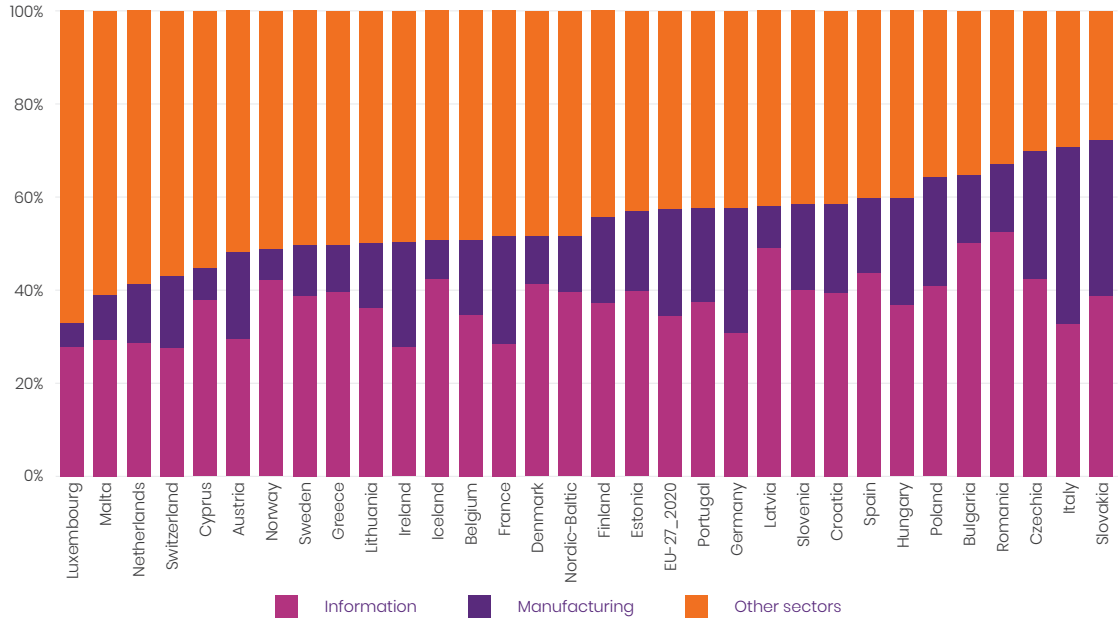
However, the dominance of manufacturing and ICT services sectors as leading the creation of ICT jobs is not observed in all the countries. The importance of other sectors in creating ICT jobs was particularly pronounced Luxembourg, Malta and Netherlands. Conversely, the ICT services sector was responsible for the largest share of ICT jobs in Romania, Bulgaria and Latvia, while the manufacturing sector was responsible for comparably large share of ICT jobs in Italy, Slovakia, Czechia as well as Germany. For more details on the sectoral composition of ICT employment across countries, see Chart 8.

Chart 7. ICT specialists in employment by occupation, 6 largest economic sectors, EU27, 2020.



Source: Eurostat, Labour Force Survey, special data extraction provided by Eurostat.

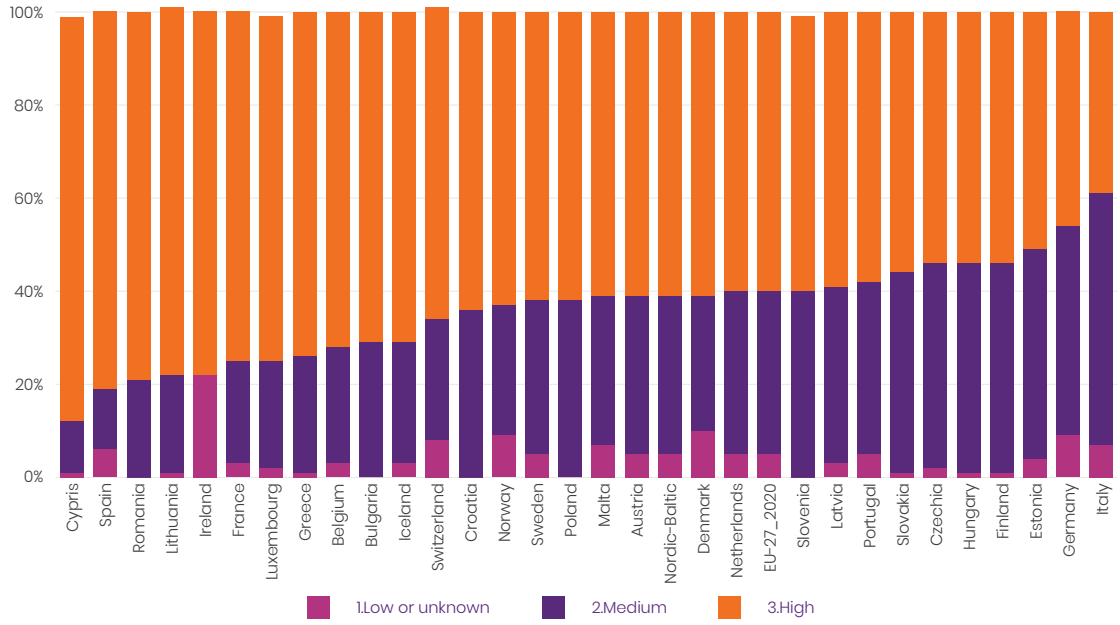
Chart 8. ICT specialists in employment by sector and country, 2020.



Source: Eurostat, Labour Force Survey, special data extraction provided by Eurostat. Reading note: countries are sorted in descending order according to the share of ICT specialists employed in "Other" economic sectors.

In terms of educational background, in the EU27 in 2020, 60% of ICT specialists were with high-level of educational attainment and 35% with a medium-level educational attainment. In Cyprus and Spain 80% or more of ICT specialists were with high-level of education, while in Italy and Germany less than 50% were. For more details on the composition of educational attainment of ICT specialists, see Chart 9.

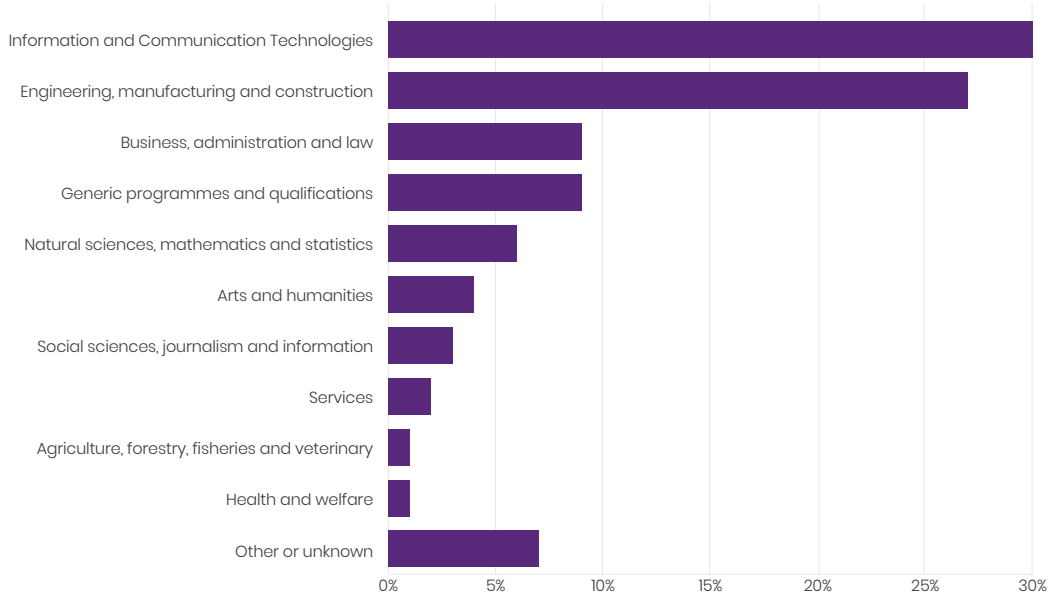
Chart 9. ICT specialists in employment by their level of education, 2020.



Source: Eurostat, Labour Force Survey, special data extraction provided by Eurostat. Reading note: countries are sorted in descending order according to the share of ICT specialists with a high level of education.

In terms of educational background by field, in EU27 the two leading fields of studies, leading to ICT specialist jobs were Information and Communication technologies (30% of young ICT specialists aged 15-34 have studies this field of study) as well as Engineering, Manufacturing and Construction (27% of young ICT specialists have studies this field of study). For more details, please see Chart 10.

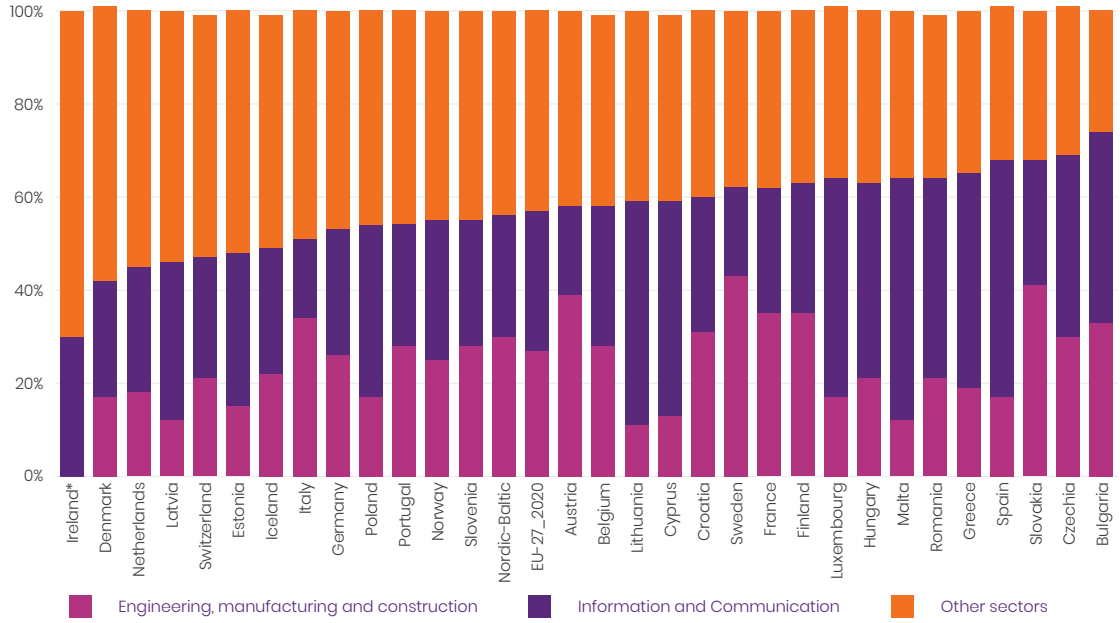
Chart 10. ICT specialists in employment by field of study, EU27, 2020.



Source: Eurostat, Labour Force Survey, special data extraction provided by Eurostat.

When looking at the prominence of different fields of study among young ICT specialists in employment, it can be seen that ICT field of studies are most frequent among young ICT specialists in such countries as Malta, Spain and Lithuania, while they are least frequent in Italy, Sweden and Austria. Engineering studies are an important source of ICT specialists in Sweden, Slovakia and Austria while they have relatively little importance in Lithuania, Malta and Cyprus. Other fields of studies are relatively most prominent in such countries as Denmark, Netherlands and Latvia. For further details, please see chart 11.

Chart 11. ICT specialists in employment by main fields of study, 2020.



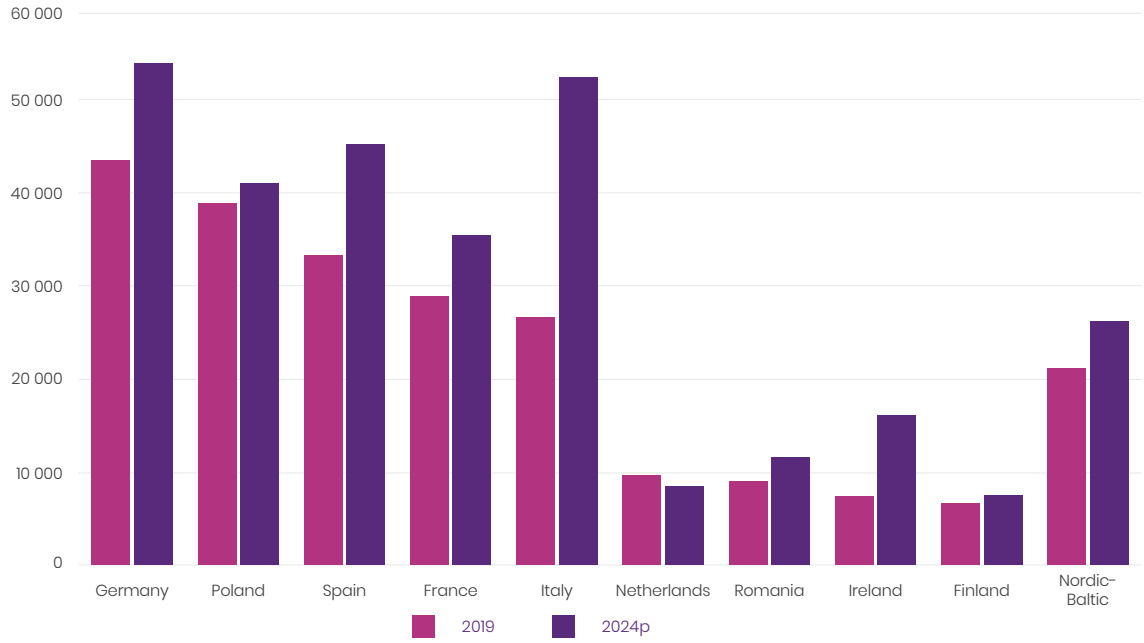
Source: Eurostat, Labour Force Survey, special data extraction provided by Eurostat. Reading note: countries are sorted in descending order according to the share of ICT specialists with "Other" field of study. For Ireland, the data on ICT specialists with engineering, manufacturing and construction field of study is not available.

2.3 ICT GRADUATES AND THEIR SITUATION IN THE LABOUR MARKET

In the previous sections the analysis was focused on individuals, working in occupations which are presumed to require advanced ICT skills. An alternative way how to look at ICT skills is to analyse the number and composition of individuals who report to have graduated from programmes with a specialization in ICT. There are two different mathematical ways to calculate ICT graduates – firstly, as the number of graduates completing their education each year – the so-called "in-flow" and, secondly, the total number of persons with ICT-diplomas in the labour market. In the EU, the first type of data is provided via the education statistics (so-called Unesco-OECD-Eurostat data) while the second type of data is provided via the regular employment statistics, collected through the EU Labour Force Survey.

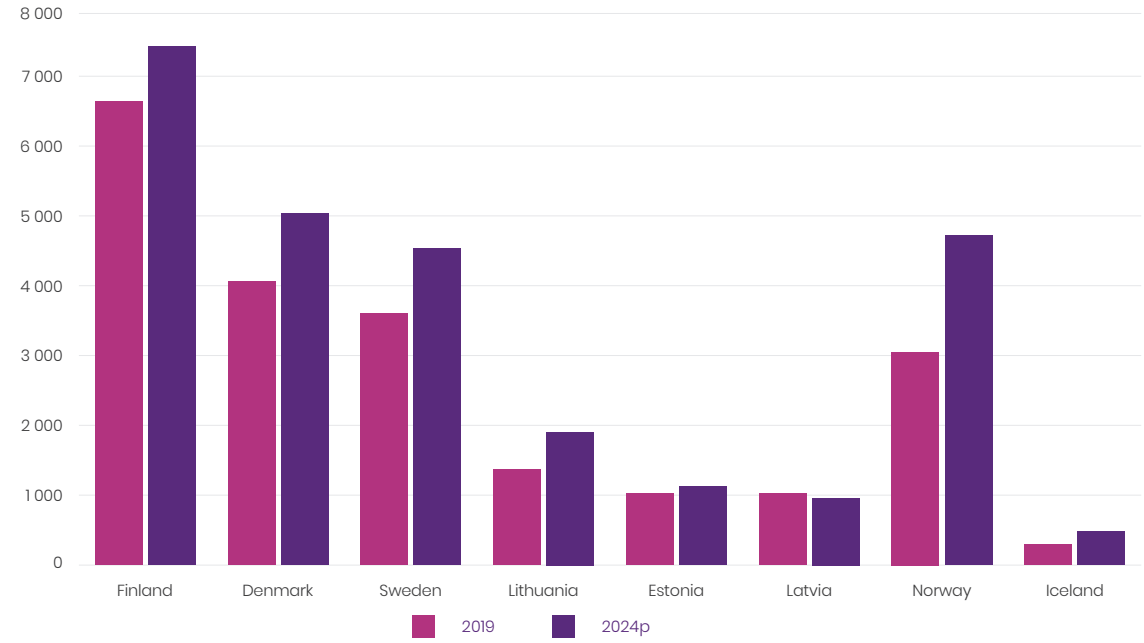
The total number of ICT graduates in Europe in 2019 (i.e., 2019-2020 academic year, the latest year for which data is available) was more than 250 thousand. The top three countries with largest number of ICT graduates in 2019 were Germany (43 thousand), Poland (39 thousand) and Spain (33 thousand). It is projected that by 2024 (i.e., 2024-2025 academic year), if growth-rates observed during the last 5 years remain, the total number of ICT graduates in the EU should reach 350 thousand (see Charts 12 and 13).

Chart 12. The number of ICT graduates in 2019 and projection for 2024, largest 9 countries.



Source: Eurostat, Unesco-OECD-Eurostat (UOE) data collection, online table code [educ_uoe_grad02].

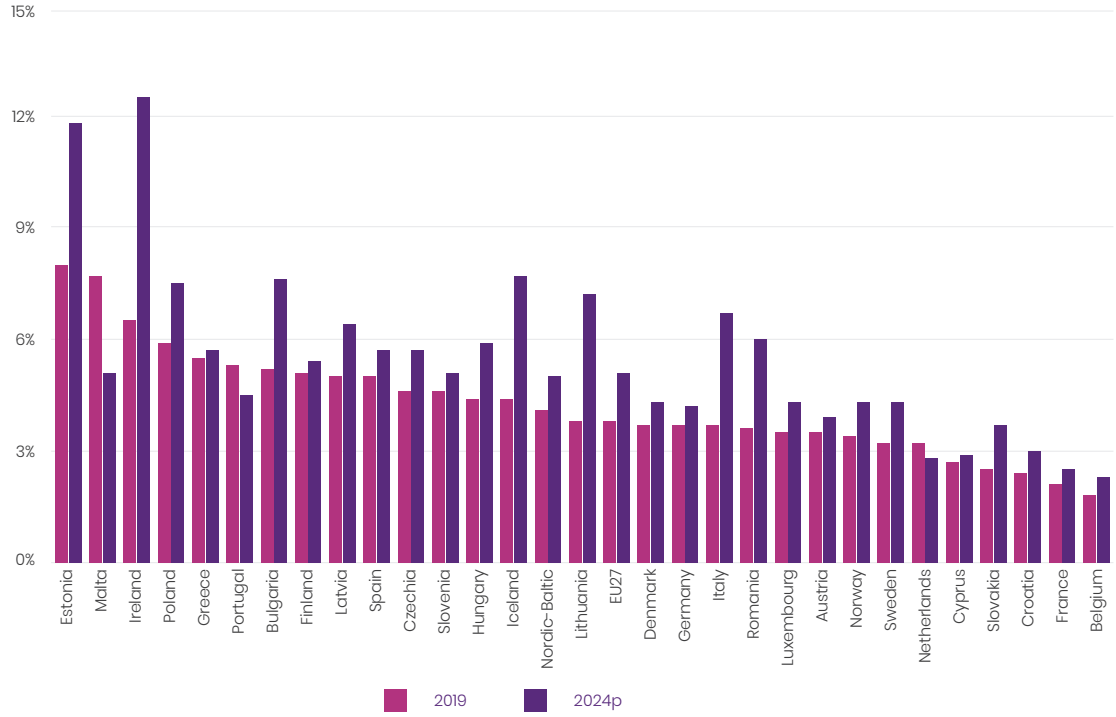
Chart 13. The number of ICT graduates in 2019 and projection for 2024, in the Nordic-Baltic region.



Source: Eurostat, Unesco-OECD-Eurostat (UOE) data collection, online table code [educ_uoe_grad02].

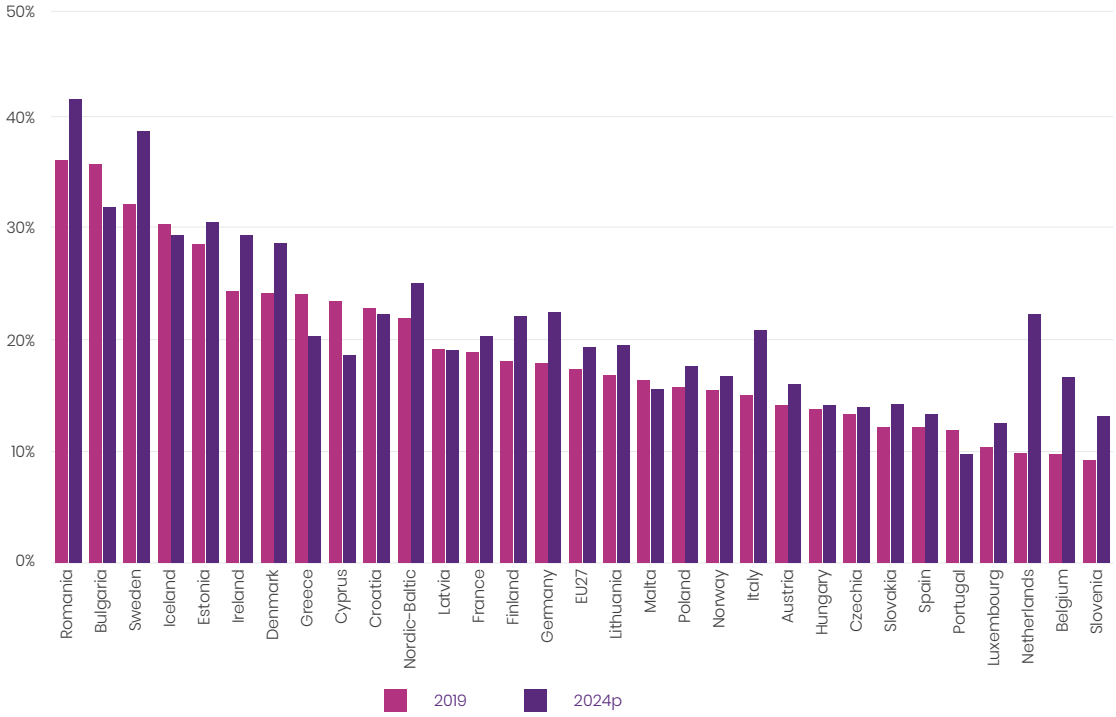
In terms of the relative share of ICT-graduates among all graduates, in 2019 in EU27 they represented 3.8% of all graduates from vocational or academic education. The largest proportion was observed in Estonia (8%), Malta (7.7%) and Ireland (6.5%). By 2024, it is projected that share of ICT graduates in the EU27 will reach 5.1% and will further increase most significantly in Ireland, Estonia and Lithuania (see Chart 14). In terms of gender gap, in 2019 in the EU27 only 17.3% of ICT graduates were women, ranging from 36% in Romania to 9.2% in Slovenia (see chart 15).

Chart 14. The share of ICT graduates out of all graduates in 2019 and projection until 2024, by country.



Source: Eurostat, Unesco-OECD-Eurostat (UOE) data collection, online table code [educ_uoe_grad02]. The methodology and outputs of projections are presented in the Annex of this report.

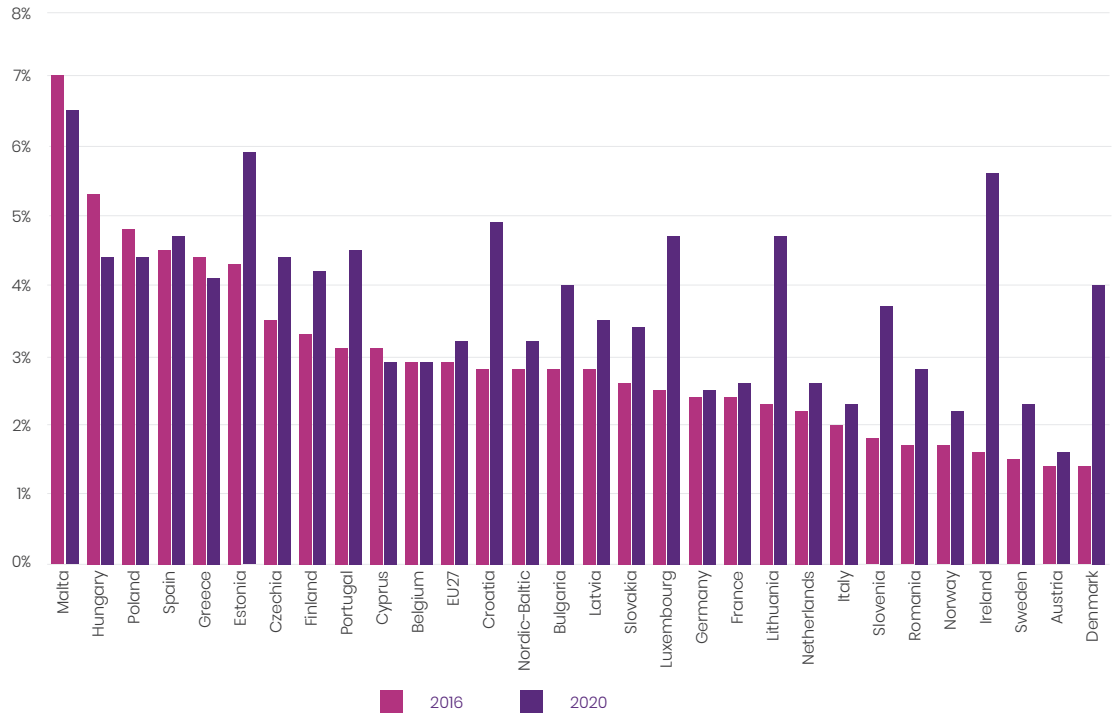
Chart 15. Share of women among ICT graduates in 2019 and projection until 2024, by country.



Source: Eurostat, Unesco-OECD-Eurostat (UOE) data collection, online table code [educ_uoe_grad02]. The methodology and outputs of projections are presented in the Annex of this report.

Now, when moving the other measure of ICT skills availability – the number and proportion of ICT diploma-holders within the broader population, the share of young (15-34) ICT-diploma holders in 2016 ranged from 7% in Malta to 1.4% in Denmark (see chart 16). In a number of countries significant changes took place between 2016 and 2020, with the share increasing significantly in such countries as Ireland (by 4 p.p.), Denmark (2.6 p.p.) or Lithuania (2.5 p.p.). However, in a number of countries the share of ICT-diploma holders has declined, including in Hungary (by 0.9 p.p.), Malta (0.6 p.p) and Poland (0.4 p.p.).

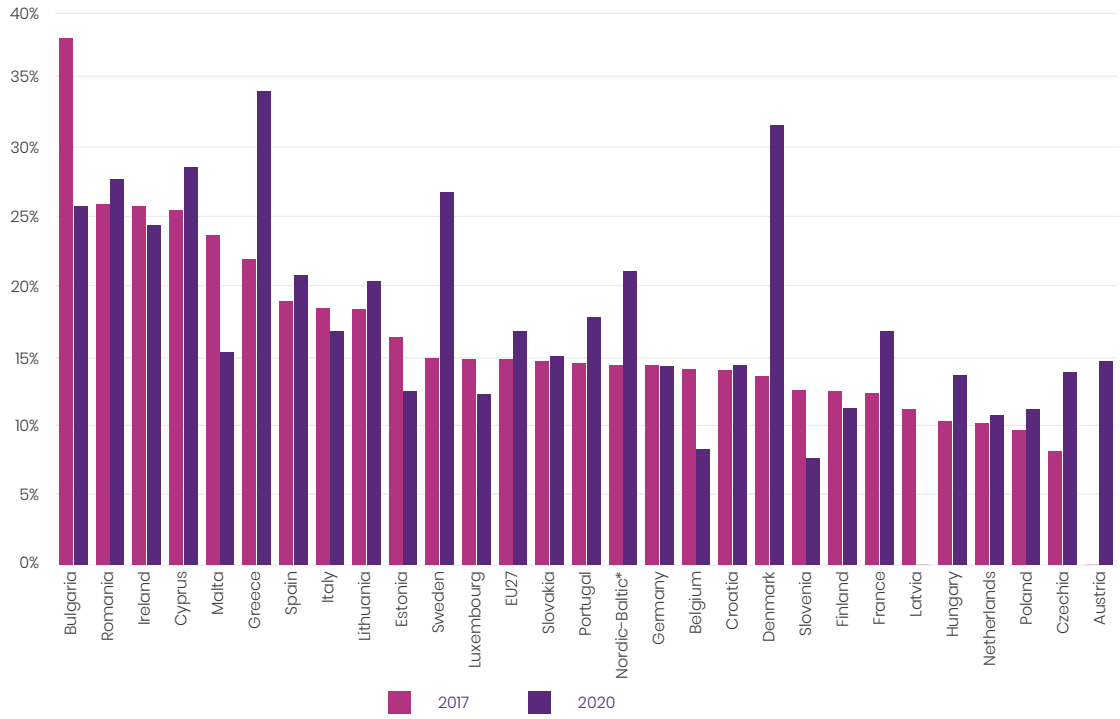
Chart 16. The share of ICT-diploma holders among all employed persons aged 15-34, 2016-2020.



Source: Eurostat, Labour Force Survey, special data extraction provided by Eurostat. Reading notes: countries are sorted in descending order according to the share of ICT-diploma holders in employment in 2016.

In terms of gender gap among the ICT-diploma holders, the gap seems to be more significant than the gap among the persons employed as ICT specialists. In the EU27, the share of women among those who have an ICT diploma in 2020 was 16.7%, indicating quite lower diversity as compared to the actual diversity within the labour market (18.5% of all persons employed as ICT specialists in the EU27 were women). Over the period under the analysis in a number of countries gender diversity among ICT-diploma holders has increased significantly, in particular in the Nordic-Baltic countries, i.e. Denmark (by 18 p.p.), Sweden (12 p.p.) as well as Greece (12 p.p.). Conversely, in Malta, the share of women among ICT-diploma holders has declined from 37.7% in 2017 to 25.7% in 2020. See Chart 17 for more details.

Chart 17. Share of women among ICT-diploma holders aged 15-34, 2017-2020.



Source: Eurostat, Labour Force Survey, special data extraction provided by Eurostat. Reading notes: countries are ranked in descending order according to the share of women among ICT-diploma holders in 2017. *In his chart the Nordic-Baltic regional group include only EU Member States due to data gaps for NO and IS.

2.4 A REFLECTION ON ICT SKILLS IMBALANCE

Given the relatively rapid growth of the number of jobs requiring specialized ICT skills, it is often debated to what extent there are ICT skills gaps and mismatches. To assess ICT skills gaps, it needs to be established which jobs require (which) ICT skills. From a statistical point of view, there are at least several ways how to establish what ICT skills are required and what ICT skills are available in a particular country or territory.

One of the most straightforward ways to identify the educational background of individuals who are employed in ICT specialists' jobs. Educational background can include such information as the highest level of education attained; the orientation of that education between general (non-specialized) and vocational (labour market specific); the field of studies and other information about prior studies. With the statistical data available at the European level, it is possible to identify the most frequent level and field of education held by ICT specialists. These are presented in table 2.

As can be seen from the table, the majority of ICT specialists are those who have completed a high level of education with an ICT or engineering field of studies or a medium level of education with engineering field of studies. A notable, but smaller number of ICT specialists also come from Arts, Business or General educational programmes. Also of note that majority of ICT technicians have an engineering background at a medium level of education.

This data indicates that many ICT specialists have studied other fields of studies beyond information and communication (ICT).

Another way to look at ICT skills is to analyses how many ICT graduates are working in ICT v/s non-ICT jobs, this data indicates that around a third of those with ICT degrees are working in non-ICT jobs (see Table 3 for more details).

Table 2. The level and field of education of employed ICT specialists 15-34, EU27, 2020 (in thousands).

	ICT Managers	ICT Professionals	ICT Technicians	ICT installers and repairers
1. Low - TOTAL	**36,2**	**-**	**26,2**	**87,5**
2. Medium - Arts and humanities	-	29,8	23,6	-
2. Medium - Business, administration and law	-	30,8	43,7	-
2. Medium - Engineering, manufacturing and construction	-	54,1	268,2	106,3
2. Medium - Generic programmes and qualifications	-	144,4	141,0	27,4
2. Medium - Information and Communication Technologies	-	85,3	117,4	-
2. Medium - TOTAL	**-**	**371,5**	**679,0**	**163,0**
3. High - Arts and humanities	-	118,7	42,0	-
3. High - Business, administration and law	-	134,5	55,1	-
3. High - Engineering, manufacturing and construction	-	452,9	212,1	-
3. High - Generic programmes and qualifications	-	-	-	-
3. High - Information and Communication Technologies	29,7	516,0	161,8	-
3. High - TOTAL	**77,7**	**1469,3**	**564,7**	**38,2**

Source: Eurostat, Labour Force Survey, special data extraction provided by Eurostat. Figures below 50 thousand are of low reliability, figures of very low reliability are not shown (the cells are blank). High level of education corresponds to completed tertiary level programmes, medium level – upper-second or post-secondary non-tertiary programmes while low level of education corresponds educational programmes below upper secondary educational level.

Table 3. ICT graduates 15-34, employed in ICT and non-ICT jobs by occupation, EU27, 2020 (in thousands).

Broad occupational group	ICT specialists (matched)	Other jobs (mismatched)
Legislators senior officials and managers	33,1	35,0
Professionals	675,3	150,6
Technicians and associate professionals	279,2	91,9
Sub-total	**987,6**	**277,6**
Clerks	-	95,2
Service workers and sales workers	-	126,1
Craft and related trades workers	-	77,1
Plant and machine operators and assemblers	-	75,0
Elementary occupations	-	47,7
Sub-total	**-**	**421,0**
TOTAL	**1011,8**	**722,5**

Source: Eurostat, Labour Force Survey, special data extraction provided by Eurostat. Figures below 50 thousand are of low reliability, figures of very low reliability are not shown (the cells are blank).

It is possible to cross-check to what extent individuals feel that their educational background fits or does not fit the job they are doing. Such information was collected from all European Union countries in 2016 as an ad-hoc topic as part of the regular EU Labour Force Survey. It allows to calculate the share of individuals, who report that their education corresponds well or in part to their job. Due to data limitations, this is possible to compute only for ICT specialists with either ICT or Engineering background. The results are presented in Table 4.

Table 4. Share of young (15-34) employed persons, reporting that their education partially or fully corresponds to their job, depending on field of study and job profile, EU27, 2020

	ICT jobs	Other jobs
Engineering, manufacturing and construction	81,6%	72,6%
Information and Communication Technologies	93,6%	64,7%

Source: Eurostat, Labour Force Survey, 2016 ad-hoc module on young people in the labour market; special data extraction provided by Eurostat.

As a conclusion, it is evident that employed ICT specialists can have varied educational background, preparing them relatively well for ICT-related jobs. The majority of ICT specialists have either ICT or Engineering background, but ICT-relevant skills seem to be provided also in some other educational programmes, including Business, Natural Sciences or Arts programmes. This makes it evident that for estimating the supply of ICT skills, assessment cannot be limited only to individuals reporting to have completed ICT programmes, but might also need to include other relevant (sub)programmes with elements relevant for ICT-related jobs, notably some engineering, business, natural science and arts programmes. For making more detailed analysis of the availability and need for ICT skills, more detailed information on the composition of educational programmes as well as job requirements could be useful.

3. REDUCING GENDER GAP IN ICT – SOLUTIONS, INITIATIVES AND GOOD PRACTICES

As seen from the previous section, in all the European countries covered by the analysis there is persistent gender gap challenge – on average less than 1 in 5 of ICT specialists working in European countries is a woman. What is more concerning is that women represent only around 15% of young adults 15-34 holding an ICT degree. Even among those who completed their education in ICT field most recently (i.e. those who finished their education in 2019/2020 school year) the share of women is only marginally higher at 17.3%. If trends will remain as in the recent past, little change can be expected over the coming years in Europe:

- The share of women among all ICT specialists (no matter their educational background) is projected to increase only marginally from 18.5% in 2020 to 19.1% in 2025 (see chart 5 above);
- The share of women among young adults (15-34) with an ICT degree can also be expected to increase only relatively little, as over last 5 years it has increased only by 2p.p. from 14.7% in 2015 to 16.7% in 2020 (see chart 17 above)[9];
- Finally, the share of women among current graduates is also projected to increase only marginally from 17.3% in 2019/2020 school year to 19.3% in 2024/2025 school year (see chart 15 above).

3.1 WHAT ARE THE SOLUTIONS FOR REDUCING THE GENDER GAP IN ICT?

For framing the space of possible solutions to the gender gap in ICT challenge, at least three questions in needs to be answered: the question of pathways; the question of actors and the question of concrete actions – to be taken by one or another actor in relation to one or another pathway.

The first question is about pathways for women to become ICT professionals. For example, women can access ICT jobs through the traditional educational pathway. This includes getting interested in technologies early in life (though also aspirational gender gaps seem to appear early in life[10]); preparing for ICT-related specialization during the final years of school education; then pursing ICT-related programme in further vocational or academic education and ultimately entering ICT specialist workforce.

As the above-mentioned "traditional" pathway is obviously a very long-term solution, there are other possibilities to be considered, which may have an impact over shorter time-period. For example, as presented in this report, the majority of ICT specialists do not come from an ICT studies background. Thus, those educational programmes, which already attract more

[9] Forward looking projection for this population group was not possible due to multiple data gaps across time.
[10] Already at the age of 15, less than 1% of girls expect to work as ICT professionals, compared with around 5% for boys as reported by EIGE in "Women and Men in ICT: a chance for better work-life balance. Research note to support the Bulgarian presidency". https://eige.europa.eu/publications/women-and-men-ict-chance-better-work-life-balance-research-note

women and seem to be a good starting point for a significant number of ICT specialists. Such programmes (i.e. in Business or Arts/Design fields) could include more ICT-related courses and dedicated career orientation services, allowing more of their graduates to access ICT specialist jobs. Sweden can be an inspiring example, with the second highest share of ICT workers in Europe (see chart 4), at the same time it has the lowest share of ICT diploma-holders among the young workers in general (see chart 16) and among ICT specialists in particular (see chart 11).

Finally, a pathway which may have the most rapid impact is building pathways for women, working in other fields, to access jobs in ICT domains. This is possible through such measures as mentoring programmes (one of them is presented in detail below in the report), targeted courses for early or mid-career workers or career mobility pathways inside and across organizations.

The second question is about which actors could initiate the change. The most obvious actor, is of course, the policy making institutions. Given the fact that social equity is an issue affecting the whole of a society, national or local governments have the mandate and the instruments at hand to deal with such issues. At the same time, government actors face multiple constraints – including the need for a political consensus, lack of knowledge about the situation on the ground, large scale and low efficacy instruments, etc.

Initiative from the side of other actors, thus, could be very useful to complement, or where it cannot be mobilized – to replace policy action. These may include corporate actors, redesigning their talent acquisition systems to address gender gaps and broader equity challenges. This may also include third-sector actors, who have good on-the-ground knowledge in particular when dealing with social issues or vulnerable groups.

The third question is about types of actions to be undertaken. There is a broad literature available addressing the issue of digital gender gap, though more oriented towards general access of women to ICTs rather than specifically dealing with access of women to ICT profession[11],[12],[13]. While the list of possible actions is probably unlimited, very general orientation could build upon the particular strengths and capabilities of each type of actor mentioned above. For example, government actors, being responsible for the provision of public services (such as education) could make effort to adjust educational pathways so they lead to a more diverse ICT workforce. Government's actors could also take action to reduce the prevalence of discriminant hiring practices (even though skills and aspirational gaps, rather than discrimination, like drives the gender gap in ICT). Corporate actors could review their talent sourcing systems and pipelines as well as dedicate resources for specialized public or third-sector organizations to provide basic training, mentoring and guidance.

[11] https://www.itu.int/en/mediacentre/backgrounders/Pages/bridging-the-gender-divide.aspx
[12] https://www.g20-insights.org/policy_briefs/bridging-the-gender-digital-gap/
[13] https://digital-strategy.ec.europa.eu/en/library/increase-gender-gap-digital-sector-study-women-digital-age

3.2 GENDER GAP IN ICT IN THE NORDIC-BALTIC REGION: INITIATIVES AND ACTIONS

As a very initial observation, it can be stated that gender gap in ICT in the Nordic-Baltic region is relatively smaller as compared to other European countries. The average share of women among ICT professionals in the region being 21.8% in 2020, even if low in absolute terms, is significantly above the EU27 average of 18.5%. When looking among the young ICT diploma holders aged 15-34, in the Nordic-Baltic region women represented also a relatively modest 21%. Nevertheless, it seems that there has been some progress in increasing the share of women among recent ICT graduates in the last few years and this growth seems to be accelerating. Notably, among ICT graduates in the school year 2019/2020 the share of women reached 21.9% in the whole Nordic-Baltic region and even 32.1% in Sweden (third largest share in Europe). It is projected that in school year 2024/2025 the share of women will reach 25% in the whole Nordic-Baltic region and in Sweden almost 40%. The growth of women among ICT graduates was observed also in some other Nordic-Baltic countries such as Denmark and Finland (see chart 15).

Throughout the Nordic-Baltic region a growing range of initiatives are being established trying to address the challenge of under-representation of women in the ICT sector. In order to get a better overview of the landscape of such initiatives, as well as to stimulate their cooperation and facilitate their scale-up, the Nordic Council of Ministers together with the Women Go Tech mentorship programme in 2019 has launched an exploratory project to identify grass-root social initiatives that are encouraging female participation in tech sector[14].

The focus of the project was to organize country-specific study visits to identify and engage with local organisations and initiatives focused on reducing gender gap in ICT. Between 2019 and 2021 a total of 7 study visits were organized in Latvia, Estonia, Iceland, Denmark, Sweden, Finland and Norway, with the findings of each individual study visit shortly presented in the project website[15]. Through these visits it was possible to identity a number of interesting and promising local initiatives.

One of the most prominent is Women in Tech Sweden[16] - a non-profit organization supported by more than 20 high-profiled companies, together we are working to break new ground and set the scene for a new way of working with diversity and inclusion. Started in 2014 as an inspirational breakfast session for a bunch of female techies is now the most important platform in the Nordics for high-lighting women's place in tech and a community of 14 thousand members. Through its flagship annual event ", which in 2021 brough 120+ speakers and 3500 participants, it aims to inspire and enlighten women within the tech industry, by providing the network and experience of successful, interesting and pioneering people from the world of technology. Another initiative in Sweden is TechEq[17] – a network of companies aiming to improve gender equality within the IT-industry.

[14] https://www.norden.lt/en/projects/developing-an-inclusive-tech-ecosystem-in-the-nordic-and-baltic-regions/
[15] https://womengotech.com/initiatives/norden/
[16] https://www.womenintech.se/
[17] http://www.techeq.se/

There are a number of initiatives also in other countries. For example, in Denmark, it is the "Potential Co."[18], helping in companies and organizations to find a balance between work-life and family-life as well as develop balanced talent pipelines. In Iceland, it is the "WomenTechIceland"[19] - a touch point for events, news and discussions around women and technology. In Estonia, it is the "Tech Sisters"[20] – organizing workshop and events for women and girls for learning and networking. Similarly, the "Riga TechGirls"[21] is dedicated to educating and inspiring girls and women about technology. "Rail Girls"[22] – originally Finnish and currently global non-profit volunteer community aims to give tools and a community for women to understand technology and to build their ideas.

A number of initiatives target girls or young women still in education. This can start from very early age – such as DigiPippi[23] initiative in Denmark – a digital and social community for girls between 7 and 13 years who want to learn about technology, IT and digital opportunities. Similarly in Lithuania, the bit&Byte initiative connects technology professionals and educators with children aged 7-12 through weekly classes, already reaching 18.000 Lithuanian children[24]. In Estonia and Latvia there is the "Futureheroes"[25] – a leadership and entrepreneurship programme for 15–19-year-old girls aim to unlock their potential and create positive change in the world. "Women Engineer Sweden"[26] organizes "IGEDay - Introduce a Girl to Engineering Day". In 2019 nearly 2000 high school students visited 120 different companies to meet female engineers and see how they work. Then there is also "Women of Aalto"[27] - a network of students which unites the future talents of tech, business and art from Aalto University.

Finally, two very important public sector players in the Nordic-Baltic gender-equality ecosystem are the NIKK[28] – Nordic Information on Gender cooperation body under the Nordic Council of Ministers and the Swedish Secretariat for Gender Research[29] , which gather and disseminate research, policy advice, practical experience and the broader knowledge in this domain.

As seen from the example above, there is a significant number of initiatives covering every country in the Nordic-Baltic region. Furthermore, it is very likely an under-estimation of the extent of available programmes, as this sample of projects was not intended to be exhaustive. At the same time, it can be seen that practically all the identified initiative are of relatively limited local or national scale. Thus, support for collaboration between these initiatives, sharing of experience, pooling of resources at regional level could very much help them reach higher scale and impact. In addition, one aspect which seem still to be somehow missing are efforts to support universities and educational institutions to attract more women into ICT-related programmes.

In the following section, a particular example of a high-impact programme - the Lithuanian initiative "Women Go Tech" which supports women in accessing ICT specialist jobs or ICT-related education is described in more detail.

[18] http://www.potentialco.dk/
[19] www.womentechiceland.com
[20] http://www.techsisters.ee/
[21] http://www.rigatechgirls.com/
[22] http://railsgirls.com/
[23] https://digipippi.dk/
[24] https://www.bitbyte.lt/
[25] https://futureheroes.ee/
[26] https://womengineer.org/
[27] https://womenofaalto.com/
[28] https://nikk.no/
[29] https://www.gu.se/en/nsfg

3.3 WOMEN GO TECH: MENTORSHIP AS A PATHWAY INTO TECH

Women Go Tech is the first and only mentorship and counselling programme in Lithuania created for women, aimed at empowering them to discover the tech (ICT and engineering) sector, to help then enter into the sector or advance their careers. Launched in 2016, it has now completed its fifth iteration. Every season the programme lasts for six months, during which the participants who have successfully passed the application process and were selected to join the programme are paired with tech business executives and experts (both men and women are actively engaged into the program) to help them navigate through the many career opportunities available in the tech sector.

Alongside with regular in-person meetings between mentees and mentors, the programme also includes monthly community gatherings and tech content events, workshops where women can network, share their experiences and learn new skills – around 100 events were organized during the fifth season. The program has also introduced practical, hands-on workshops, field visits to technology companies which became a platform for business to attract talent. Career counselling sessions (group and in private) is also a strong focus of the programme since the main goal of Women Go Tec is to reach at least 50% of talents employed in ICT sector right after the programme and support in starting application process as well as career coaching increase the chance of employment significantly.

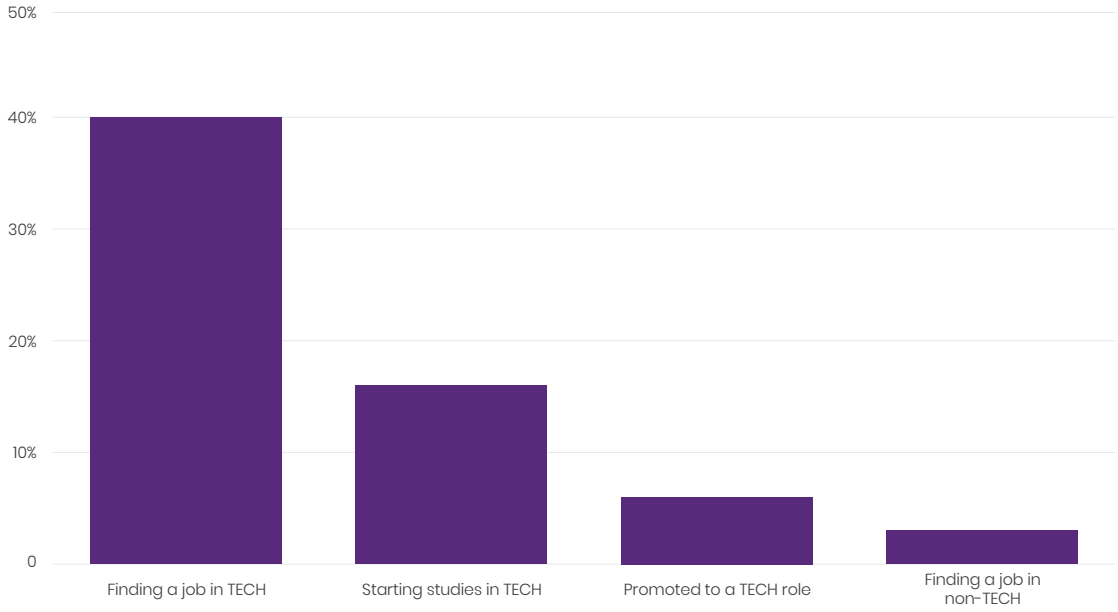
Long term professional mentorship from industry experts, high quality content sessions, events on tech related topics and community meet-ups for peer-to-peer motivation became an effective formula for delivering impact and ensuring that more and more women have the tools and much needed support to start their career in tech. The success of the programme is testified by the growing scale of the programme, particularly its attractiveness for the target audience as testified by the increasing number of applications each year.

Chart 18. The growth of Women Go Tech programme over five seasons between 2016 and 2021

Source: administrative data from the Women Go Tech programme

The impact of the programme is clear: as a result of five completed mentorship seasons, 52% of former mentees declared to have found a job in the TECH sector still during the programme and as much as 70% of former mentees declare the employment one year after they have finished the programme. By end of 2020 Women Go Tec program has already generated over 440 success stories of women entering the TECH sector; it is now well on the way to surpass its target of 500 success stories by the end of 2021. This would compare with around 1230 women who during the same time have completed vocational or academic studies in the field of ICT in Lithuania (i.e., between 200 and 300 annually)[30].

Chart 19. Women Go Tech fifth season outcome at the end of the programme



Source: online survey of participants; survey response rate was 66%. Reading notes: Job in TECH includes finding either full-time or part-time job (but part-time jobs make-up an absolute minority of the cases).

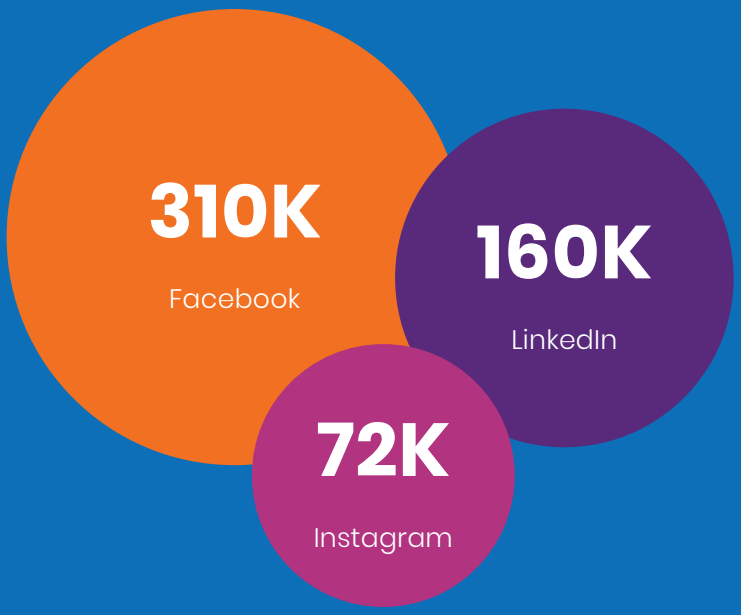
However, the impact of the programme is not limited to the participants. Public outreach is an important element of the programme. Story telling methods are used to empower women to discover technologies and consider requalification to tech as an option by sharing real life stories of Women Go Tech alumni, mentees and mentors. A large audience of women is reached ad engaged via digital and traditional media channels (blog posts, TV interviews, online portals, magazine interviews) encouraging both younger and older women to consider TECH as a promising career possibility.

[30] Eurostat, UNESCO-OECD-Eurostat data collection on education systems, online data code [educ_uoe_grad02], including a projection for school-year 2020-2021.

Chart 20. Women Go Tech fifth season social media outreach

TOTAL REACH* ON SEASON #5:

*numbers of users who saw the content

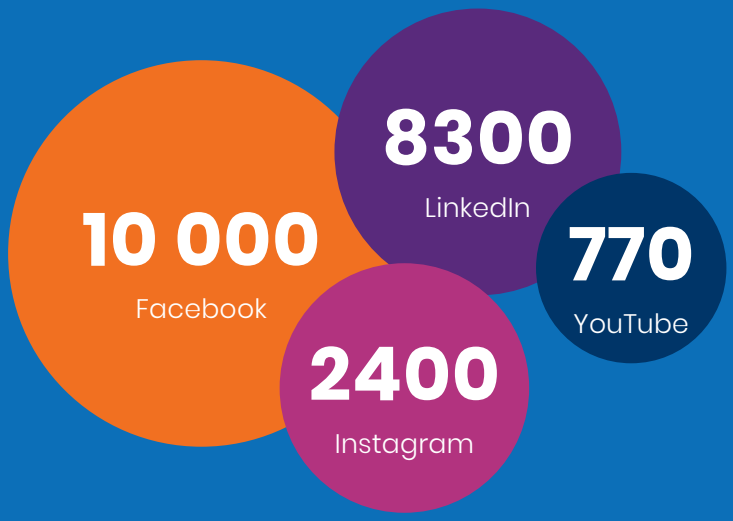


FOLLOWERS BY AGE:

25–34 **55%**

35–44 **30%**

FOLLOWERS



FOLLOWERS BY GENDER:

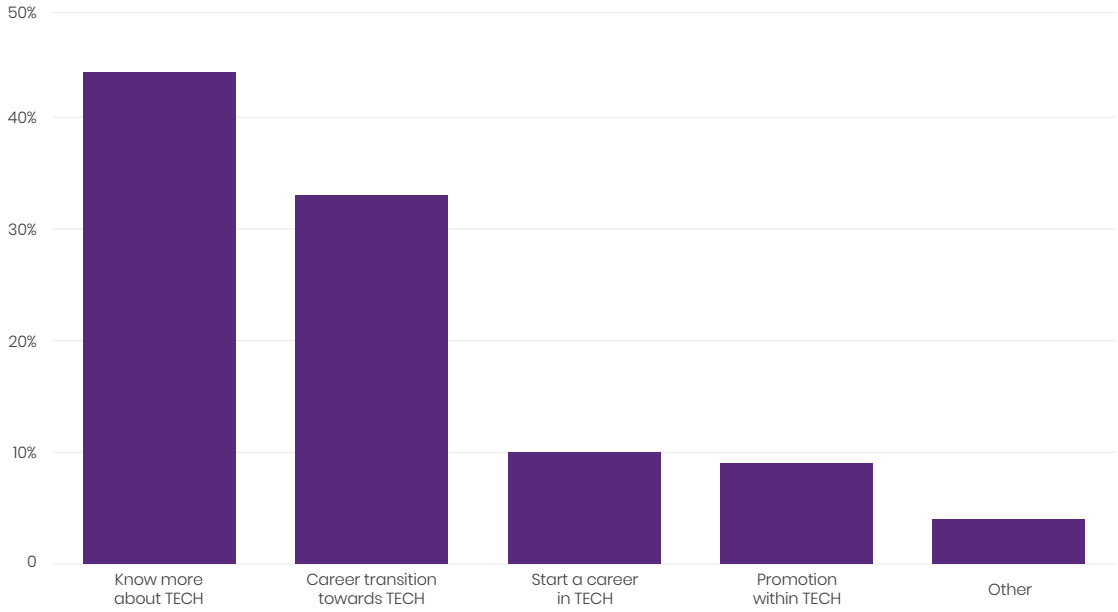
95% **women**

5% **men**

Source: administrative data from the Women Go Tech programme

In addition to the core mentorship programme, in 2020, as a response to Covid-19, Women Go Tech with the support from Google.org has launched in Lithuania and Latvia (in partnership with "Riga Tech Girls") a preparatory program "Discover Tech". The focus of the programme is to introduce opportunities in tech for women which have no prior knowledge or background in tech.

Chart 21. Motivation to join "Discover Tech" programme in Lithuania



Source: participants survey.

The programme has been extremely successful, attracting over 10.000 participants 2020 and over 9000 participants in 2021. During this programme, participants receive access to 7 weeks content sessions explaining the structure of tech industry and different roles available and preparation needed to get into the industry. It is expected that up to 30% of women participating in "Discover tech" engage further with the TECH sector, either through an application to Women Go Tech mentorship program, tech studies or other types of online/ offline courses.

"Women Go Tech" programmes clearly highlight, that there is a strong potential for attracting more women towards the TECH sector and that a large number of women are interested in such opportunities. However, as shown previously in this report, existing pathways are likely often too restricted or too inflexible to make it possible for a sufficiently large number of women to find their way towards TECH. Thus, being able to increase the accessibility and scale of traditional as well as innovative career pathways towards TECH is likely to be one of the main solutions in making sure that gender gaps in ICT and TECH more broadly are reduced, if not fully eliminated.

4. CONCLUSIONS AND RECOMMENDATIONS.

The growing technological intensity of everyday life result in a growing number of jobs across public and private organisations requiring advanced (specialist) ICT skills. Unfortunately, women find it difficult to access these employment opportunities, with less than 1 in 5 of the ICT specialists in employment in Europe being women. Projections developed for this report also suggest that based on recent trends, imminent change is unlikely in the near future in the Europe:

- The share of women among all ICT specialists (no matter their educational background) is projected to increase only marginally from 18.5% in 2020 to 19.1% in 2025 in the EU27;
- The share of women among young adults (15-34) with an ICT degree can also be expected to increase only relatively little, given that over last 5 years it has increased only by 2p.p. from 14.7% in 2015 to 16.7% in 2020 in the EU27;
- Finally, the share of women among current graduates in ICT is also projected to increase only marginally from 17.3% in 2019/2020 school year to 19.3% in 2024/2025 school year in the EU27

The challenge can be summarized in this way: ICT programmes in formal education systems, being the primary pathway towards ICT jobs, face equally big gender gap. At the same time, alternative pathways are only few and limited in scope. Nevertheless, this study, which was a result of a project initiated by the Nordic Council of Ministers and Women Go Tech, highlights that there are many promising grassroot initiatives across countries. Such initiatives, if mobilized and scaled-up, could well contribute much more in reducing gender gap in ICT. The potential impact of a scalable initiative is in particular testified by the example of Women Go Tech initiative, showing how a scalable and effective initiative can achieve tangible impact over a relatively short period of time.

ANNEX I: THE LIST OF ICT SPECIALISTS' OCCUPATIONS

1. ICT Service managers
incl. ICT service managers
2. ICT professionals
incl. Systems analysts
incl. Software developers
incl. Web and multimedia developers
incl. Application programmers
incl. other software and multimedia developers and analysts
incl. Database designers and administrators
incl. Systems administrators
incl. Computer network professionals
incl. other database and network professionals
incl. Electronic engineers
incl. Telecommunication engineers
incl. Graphic and multimedia designers
incl. Information technology trainers
incl. ICT sales professionals
3. ICT technicians
incl. ICT operations technicians
incl. ICT user support technicians
incl. Computer network and systems technicians
incl. Web technicians
incl. Broadcasting and audio-visual technicians
incl. Telecommunications engineering technicians
incl. Electronics engineering technicians
4. Electronics and Telecommunications Installers and Repairers
incl. Electronics mechanics and servicers
incl. ICT installers and servicers

Source: Eurostat. A detailed technical description can be found here: https://ec.europa.eu/eurostat/cache/metadata/en/isoc_skslf_esms.htm

ANNEX II: PROJECTIONS OF THE SHARE OF ICT SPECIALISTS IN EMPLOYMENT.

Data, by country, for 2020 and projections for the years 2021-2025.

	2020	2021p	2022p	2023p	2024p	2025p
EU27	4.3	4.5	4.7	4.8	5.0	5.2
Belgium	5.0	5.2	5.4	5.6	5.8	6.0
Bulgaria	3.3	3.4	3.5	3.5	3.6	3.7
Czechia	4.2	4.3	4.5	4.6	4.7	4.8
Denmark	5.5	5.6	5.8	5.9	6.0	6.1
Germany	4.7	5.0	5.2	5.5	5.7	6.0
Estonia	6.5	6.8	7.1	7.4	7.7	8.0
Ireland	5.7	5.9	6.1	6.3	6.5	6.7
Greece	2.0	2.0	2.1	2.1	2.1	2.1
Spain	3.8	3.9	4.1	4.2	4.3	4.4
France	4.5	4.7	5.0	5.2	5.4	5.6
Croatia	3.7	3.8	3.9	4.0	4.1	4.2
Italy	3.6	3.7	3.8	3.8	3.9	4.0
Cyprus	3.1	3.2	3.3	3.4	3.5	3.6
Latvia	3.7	3.9	4.2	4.4	4.6	4.8
Lithuania	3.3	3.5	3.7	3.9	4.1	4.3
Luxembourg	6.3	6.6	6.9	7.2	7.5	7.8
Hungary	3.8	3.9	3.9	4.0	4.0	4.1
Malta	4.4	4.5	4.7	4.8	4.9	5.0
Netherlands	5.9	6.1	6.3	6.5	6.7	6.9
Austria	4.5	4.6	4.7	4.7	4.8	4.9
Poland	3.4	3.6	3.8	3.9	4.1	4.3
Portugal	4.0	4.2	4.5	4.7	4.9	5.1
Romania	2.4	2.5	2.6	2.7	2.8	2.9
Slovenia	4.4	4.6	4.9	5.1	5.3	5.5
Slovakia	4.2	4.5	4.9	5.2	5.5	5.8
Finland	7.6	7.9	8.1	8.4	8.6	8.9
Sweden	7.5	7.8	8.1	8.4	8.7	9.0
Iceland	4.7	4.8	4.8	4.9	4.9	5.0
Norway	5.0	5.2	5.4	5.6	5.8	6.0
Nordic-Baltic	5.5	5.7	5.9	6.1	6.3	6.5

Source: Eurostat, Labour Force Survey, online table code [isoc_sks_itsps]. The projections are calculated based on a constant average country-specific growth rates of the share of ICT specialists in total employment as observed during the period 2011-2020. The shares for Nordic-Baltic region are calculated here as a simple average.

ANNEX III: PROJECTIONS OF THE SHARE OF WOMEN AMONG ICT SPECIALISTS IN EMPLOYMENT.

Data, by country, for 2020 and projections for the years 2021-2025.

	2020	2021p	2022p	2023p	2024p	2025p
EU27	18.5%	18.6%	18.8%	18.9%	19.0%	19.1%
Belgium	17.4%	17.6%	17.8%	17.9%	18.1%	18.2%
Bulgaria	28.2%	27.7%	27.3%	26.8%	26.4%	25.9%
Czechia	10.3%	10.2%	10.2%	10.1%	10.1%	10.0%
Denmark	22.3%	22.5%	22.8%	23.1%	23.3%	23.6%
Germany	17.5%	17.5%	17.6%	17.6%	17.6%	17.7%
Estonia	22.1%	22.0%	22.0%	21.9%	21.9%	21.8%
Ireland	20.7%	20.4%	20.2%	20.0%	19.7%	19.5%
Greece	26.6%	26.9%	27.2%	27.5%	27.8%	28.2%
Spain	19.8%	19.8%	19.8%	19.7%	19.7%	19.7%
France	20.1%	20.1%	20.1%	20.1%	20.1%	20.1%
Croatia	18.2%	19.1%	20.0%	21.0%	22.0%	23.0%
Italy	15.7%	15.8%	15.9%	16.0%	16.1%	16.2%
Cyprus	18.0%	17.9%	17.8%	17.7%	17.6%	17.5%
Latvia	23.0%	23.4%	23.8%	24.1%	24.5%	24.9%
Lithuania	23.6%	24.3%	25.1%	25.9%	26.6%	27.4%
Luxembourg	19.9%	20.5%	21.2%	21.9%	22.6%	23.3%
Hungary	12.3%	12.7%	13.0%	13.3%	13.6%	14.0%
Malta	11.3%	11.3%	11.4%	11.4%	11.5%	11.5%
Netherlands	17.6%	18.3%	19.0%	19.7%	20.4%	21.1%
Austria	20.3%	21.5%	22.8%	24.2%	25.6%	27.0%
Poland	15.0%	15.1%	15.2%	15.2%	15.3%	15.4%
Portugal	21.8%	21.9%	21.9%	22.0%	22.0%	22.1%
Romania	26.2%	26.6%	27.0%	27.4%	27.8%	28.2%
Slovenia	17.3%	17.9%	18.4%	19.0%	19.6%	20.2%
Slovakia	15.8%	15.8%	15.8%	15.9%	15.9%	15.9%
Finland	23.3%	23.6%	23.9%	24.3%	24.6%	24.9%
Sweden	21.3%	21.5%	21.8%	22.0%	22.2%	22.4%
Iceland	20.9%	21.4%	21.9%	22.5%	23.0%	23.5%
Norway	19.4%	20.0%	20.6%	21.2%	21.8%	22.5%
Switzerland	16.3%	16.9%	17.6%	18.2%	18.8%	19.5%
Nordic-Baltic	21.8%	22.0%	22.3%	22.5%	22.8%	23.0%

Source: Eurostat, Labour Force Survey, online table code [isoc_sks_itsps]. The projections are calculated based on a constant average country-specific growth rates of the share of ICT specialists in total employment as observed during the period 2011-2020. The shares for Nordic-Baltic region are calculated here as a simple average.

ANNEX IV: PROJECTIONS OF THE SHARE OF ICT GRADUATES IN FORMAL EDUCATION.

Data, by country, for 2019/2020 school year and projections until school year 2024/2025.

	2019	2020p	2021p	2022p	2023p	2024p
EU27	3.8%	4.0%	4.3%	4.5%	4.8%	5.1%
Belgium	1.8%	1.9%	2.0%	2.1%	2.2%	2.3%
Bulgaria	5.2%	5.6%	6.0%	6.5%	7.0%	7.6%
Czechia	4.6%	4.8%	5.0%	5.2%	5.5%	5.7%
Denmark	3.7%	3.8%	4.0%	4.1%	4.2%	4.3%
Germany	3.7%	3.8%	3.9%	4.0%	4.1%	4.2%
Estonia	8.0%	8.7%	9.4%	10.1%	10.9%	11.8%
Ireland	6.5%	7.4%	8.5%	9.6%	11.0%	12.5%
Greece	5.5%	5.6%	5.6%	5.6%	5.7%	5.7%
Spain	5.0%	5.1%	5.2%	5.4%	5.5%	5.7%
France	2.1%	2.2%	2.2%	2.3%	2.4%	2.5%
Croatia	2.4%	2.5%	2.6%	2.8%	2.9%	3.0%
Italy	3.7%	4.2%	4.7%	5.3%	5.9%	6.7%
Cyprus	2.7%	2.8%	2.8%	2.8%	2.8%	2.9%
Latvia	5.0%	5.3%	5.6%	5.8%	6.1%	6.4%
Lithuania	3.8%	4.3%	4.9%	5.6%	6.4%	7.2%
Luxembourg	3.5%	3.7%	3.8%	4.0%	4.1%	4.3%
Hungary	4.4%	4.7%	5.0%	5.2%	5.5%	5.9%
Malta	7.7%	7.1%	6.5%	6.0%	5.5%	5.1%
Netherlands	3.2%	3.1%	3.0%	2.9%	2.8%	2.8%
Austria	3.5%	3.5%	3.6%	3.7%	3.8%	3.9%
Poland	5.9%	6.2%	6.5%	6.8%	7.2%	7.5%
Portugal	5.3%	5.1%	4.9%	4.8%	4.6%	4.5%
Romania	3.6%	4.0%	4.4%	4.9%	5.4%	6.0%
Slovenia	4.6%	4.7%	4.8%	4.9%	5.0%	5.1%
Slovakia	2.5%	2.7%	2.9%	3.2%	3.4%	3.7%
Finland	5.1%	5.2%	5.2%	5.3%	5.3%	5.4%
Sweden	3.2%	3.4%	3.6%	3.8%	4.1%	4.3%
Iceland	4.4%	4.9%	5.5%	6.2%	6.9%	7.7%
Norway	3.4%	3.6%	3.8%	3.9%	4.1%	4.3%
Switzerland	2.8%	2.8%	2.9%	2.9%	3.0%	3.1%
Nordic-Baltic	4.1%	4.2%	4.4%	4.6%	4.8%	5.0%

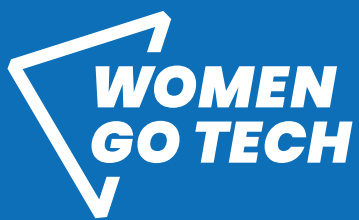
Source: Eurostat, Unesco-OECD-Eurostat (UOE) data collection, online table code [educ_uoe_grad02]. The projections are calculated based on a constant average country-specific growth rates of the total number of graduates and ICT graduates as observed during the period 2014-2019. Please note that the reference year always refers to the year during which a school-year starts (i.e. 2019 refers to data for the school-year 2019/2020). The shares for Nordic-Baltic region are calculated here as a weighted average.

ANNEX V: PROJECTIONS OF THE SHARE OF WOMEN AMONG ICT GRADUATES IN FORMAL EDUCATION.

Data, by country, for 2019/2020 school year and projections until school year 2024/2025.

	2019	2020p	2021p	2022p	2023p	2024p
EU27	17.3%	17.7%	18.1%	18.5%	18.9%	19.3%
Belgium	9.7%	10.8%	12.1%	13.4%	14.9%	16.6%
Bulgaria	35.7%	34.9%	34.1%	33.3%	32.5%	31.8%
Czechia	13.3%	13.4%	13.6%	13.7%	13.8%	13.9%
Denmark	24.1%	24.9%	25.8%	26.7%	27.7%	28.6%
Germany	17.9%	18.7%	19.6%	20.5%	21.4%	22.4%
Estonia	28.5%	28.9%	29.2%	29.6%	30.0%	30.5%
Ireland	24.3%	25.2%	26.2%	27.2%	28.2%	29.3%
Greece	24.0%	23.2%	22.5%	21.7%	21.0%	20.3%
Spain	12.1%	12.3%	12.6%	12.8%	13.1%	13.3%
France	18.8%	19.1%	19.4%	19.7%	20.0%	20.3%
Croatia	22.8%	22.6%	22.5%	22.4%	22.3%	22.2%
Italy	15.0%	16.1%	17.1%	18.3%	19.5%	20.8%
Cyprus	23.4%	22.3%	21.3%	20.4%	19.4%	18.6%
Latvia	19.1%	19.0%	19.0%	19.0%	19.0%	19.0%
Lithuania	16.8%	17.3%	17.8%	18.4%	18.9%	19.5%
Luxembourg	10.3%	10.7%	11.2%	11.6%	12.1%	12.5%
Hungary	13.7%	13.7%	13.8%	13.9%	14.0%	14.1%
Malta	16.3%	16.1%	15.9%	15.8%	15.6%	15.5%
Netherlands	9.8%	11.5%	13.6%	16.0%	18.8%	22.2%
Austria	14.1%	14.5%	14.8%	15.2%	15.6%	16.0%
Poland	15.7%	16.1%	16.4%	16.8%	17.2%	17.6%
Portugal	11.9%	11.5%	11.0%	10.5%	10.1%	9.7%
Romania	36.0%	37.0%	38.1%	39.2%	40.3%	41.5%
Slovenia	9.2%	9.9%	10.6%	11.4%	12.2%	13.1%
Slovakia	12.1%	12.5%	12.9%	13.3%	13.8%	14.2%
Finland	18.0%	18.8%	19.6%	20.4%	21.2%	22.1%
Sweden	32.1%	33.3%	34.6%	35.8%	37.2%	38.6%
Iceland	30.3%	30.1%	29.9%	29.7%	29.5%	29.3%
Norway	15.4%	15.6%	15.9%	16.1%	16.4%	16.7%
Switzerland	9.6%	9.8%	10.0%	10.2%	10.4%	10.6%
Nordic-Baltic	21.9%	22.4%	23.1%	23.7%	24.3%	25.0%

Source: Eurostat, Unesco-OECD-Eurostat (UOE) data collection, online table code [educ_uoe_grad02]. The projections are calculated based on a constant average country- and gender-specific growth rates as observed during the period 2014-2019. Please note that the reference year always refers to the year during which a school-year starts (i.e. 2019 refers to data for the school-year 2019/2020). The shares for Nordic-Baltic region are calculated here as a weighted average.


WOMEN
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